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Fish and Game Commission

QUARTERLY REPORT

STATE DOCUMENTS



Wildlife Restoration Division

JANUARY - MARCH 1953
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Helena, Montana
April 15, 1953

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Dear Sir:

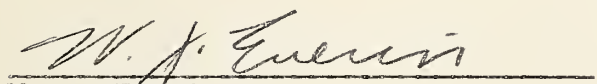
We are herewith submitting a Quarterly Progress Report in connection with the projects carried out through the use of Federal Aid in Wildlife Restoration funds.

The coverage is for the period January, February and March, 1953.

Submitted by:


Robert F. Cooney, Director
Wildlife Restoration Division

Approved by:


W. J. Everin
Acting State Fish and Game Warden

QUARTERLY PROGRESS REPORT
For The
WILDLIFE RESTORATION DIVISION
STATE OF MONTANA

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Volume IV Number 1
January, February and March
1953



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TABLE OF CONTENTS

	Page
W-1-R-12 (Eastern) Wildlife Surveys and Management	
Don L. Brown	1
Post-Season Aerial Antelope Survey (Yellowstone Unit). .	
Don L. Brown and Robert J. Fischer	5
Aerial Antelope Survey (Musselshell Unit). .Don L. Brown	8
Aerial Antelope Survey (Yellowstone Unit -Southern Wheat-	
land Sub-unit). . . Don L. Brown and Robert J. Fischer	15
Population Studies of Deer (Missouri Breaks)	
Don L. Brown and Robert J. Fischer	21
Population Studies of Deer (Powder River Unit)	
Joe Egan	28
Collection and Analysis of Deer Stomachs in Ashland Dis-	
trict (Powder River Unit). Joe Egan	31
Population Studies of Deer (Carter Unit) Joe Egan	38
W-1-R-13 (Western) Wildlife Surveys and Management	
Phillip B. Marshall	42
Tagging and Release of Mature Elk on Blackfoot Game	
Range Phillip B. Marshall	45
Tagging and Release of Elk in Upper South Fork of Flat-	
head River Phillip B. Marshall	46
Rocky Mountain Sheep Investigation Herman Ogren	48
Study of Mountain Goat Winter Range Distribution. . . .	
Phillip B. Marshall	49
State-wide Cumulative Record of Big Game Data	
Faye M. Couey	50
W-35-R-4 Southwestern Montana Unit. J. E. Gaab	61
Big Game Survey in Ruby. J. E. Gaab	70
Big Game Survey in Beaverhead River Area (Sage Creek	
Antelope Tagging). J. E. Gaab	72
Big Game Survey in Beaverhead River Area (Aerial Antelope	
Census). Philip South	73

	Page
Big Game Survey (Big Belt-Boulder Area) . . . J. E. Gaab	75
Moose Census and Distribution (Aerial Moose Census and Range Trends in Red Rock Area) Philip South	77
Moose Census and Distribution (Aerial Moose Census in Big Hole) Philip South	78
W-36-R-3 Lincoln County Deer Study Robert M. Blair	79
Thorough Investigation of Wildlife Resources Within and Adjacent to the Proposed Floodage Basin of the Libby Dam (Army Engineers Corps) on the Kootenai River in Lincoln County. D. P. Couvillion	94
W-37-R-4 Game Range Predevelopment Survey. . . . Richard L. Hodder	95
W-38-R-4 Upland Game Bird Surveys and Investigations Wm. Bergeson	97
Pre- and Post-Season Sex Ratios and Hunter Harvest. . . . Dale Witt	99
Pheasant Mortality and Causes Dale Witt	100
Pheasant Mortality and Causes Fred Hartkorn	101
Survival of Game Farm Reared Pheasants. Fred Hartkorn, Wesley Woodgerd, Wm. Bergeson	102
Survival Value of Chukar Partridge . . . Wesley Woodgerd	111
W-39-R-4 Waterfowl Surveys and Investigations . . Wynn G. Freeman	112
W-41-R-4 Hunter Harvest Determination and Big Game Evaluation . . Faye Couey	114
W-49-R-2 Fur Resources Surveys and Investigations . Fletcher Newby	139
W-5-D-11 General Wildlife Restocking James McLucas	141
W-33-D-4 Blackfoot-Clearwater Winter Big Game Range Development . Stan Mongrain	150
W-45-M-2 Maintenance of Blackfoot-Clearwater Big Game Range. . . . Stan Mongrain	151
W-47-M-2 Maintenance of Sun River Winter Elk Range. . .Robert Neal	153

STATE Montana
PROJECT NO. W-1-R-12 (Eastern)
DATE April 15, 1953
VOL. IV NO. 1

QUARTERLY PROGRESS REPORT FOR

INVESTIGATIONS PROJECTS

As Required by

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Wildlife Surveys and Management (Eastern)

2. Leader: Don L. Brown, Biologist

Joe L. Egan, Junior Biologist
Robert J. Fischer, Junior Biologist
Glen F. Cole, Student Assistant

3. Report of Progress:

Work Plan I: Antelope Census, Herd Production, Migration and Mortality Studies

Job I-A: Antelope Census
Annual job completion report attached.

Job I-B: Antelope Herd Production Studies
Annual job completion report attached.

Job I-C: Study of Antelope Migration and Population Shifts
Proceeding - report pending Yellowstone Unit Survey.

Job I-D: Study of Antelope Losses by Hunting and Natural Causes
Annual job completion report attached.

Work Plan II: Relationship of Antelope to Agricultural and Range Land Use

Job II-A: Relationship of Antelope to Winter Wheat Production
Collection and analysis of stomach samples proceeding. Enclosures will be established in 1953 for securing comparative yield data from the 1954 harvest. Observations of antelope on wheat fields will be recorded with respect to antelope activities and time intervals.

Job II-B: Relationship of Antelope to Seed and Feed Alfalfa
Collection and analysis of stomach samples proceeding.
The following outline covers aspects of the study to be
considered March 1953 through September 1953.

- A. Food habits with respect to Alfalfa as indicated by:
 - 1. Antelope minutes
 - 2. Analysis of stomachs
- B. Differential yields of forage and seed alfalfa as indicated by the comparison of clip-plots with enclosures.
- C. Differential use on alfalfa as indicated by pellet-group-counts.
- D. Activities and movements of antelope using alfalfa as indicated by:
 - 1. Observations of tagged fawns
 - 2. Comparisons of plotted airline miles from kill sites to alfalfa with respect to the incidence of alfalfa in antelope stomachs.
 - 3. Weekly daylight to dark observations of antelope bands or individuals. Observations recorded with respect to antelope activity, time intervals, vegetational types and distances traveled.
- E. Activities and movements of antelope using alfalfa with respect to the availability and use of water. Indicated by obscured tract counts, time and distance data.

Job II-C: Relationship of Antelope to Range Land
Collection and analysis of stomach samples proceeding.
The following outline covers aspects to be considered
March, 1953, through September, 1953.

- A. Food habits with respect to range land as indicated by:
 - 1. antelope minutes
 - 2. analysis of stomachs
 - 3. analysis of 1/1000 acre plots at observed feeding sites.
- B. Forage preferences of antelope as indicated by availability--use data obtained from 1/1000 acre plots at observed feeding sites.

C. Activities and movements with respect to range land will be indicated by the same techniques used to indicate the activities and movements of antelope using alfalfa.

Work Plan III: Deer Food Habits Study on Badland Type Range

Job III-A: Important Food Plants Used by Deer in Badlands
Progress report pending.

Job III-B: Evaluation of Range Conditions and Degree of Use in Key Species
Inactive pending Fish and Wildlife Service and Bureau of Land Management reports.

Job III-C: Population Studies of Deer (Missouri River Breaks)
Annual job completion report attached.

Work Plan IV: Mule Deer Food Habits on Grassland Type Range

Job IV-A: Mule Deer Food Habits on Grassland Type Range
Inactive during report period.

Job IV-B: Population Studies (Little Belt Mountains)
Inactive during report period.

Work Plan V: Census and Survey of Deer Herds in Eastern Montana

Job V-A: Population Studies of Deer (Powder River Unit)
Progress report attached.

Job V-A-1: Deer Damage to Alfalfa (Powder River Unit)
Damage to alfalfa since early November and up to the present time has been moderate to slight. Since early October the alfalfa fields have been cut and only stubble remains. Such fields have been ignored more or less by deer since that time. This might be attributed to the first killing frost which possibly renders either growing alfalfa or the stubble unsuitable for deer consumption. It is also a common practice for the ranchers of the area to run their cattle on the alfalfa stubble from December 1st until April. It may be that cattle on such fields discourages use by deer.

The only utilization of alfalfa by deer in this unit has been in stacked hay. The mild winter has produced no heavy concentrations of deer around stack-yards and interviews with ranchers disclosed a minimum of concern on their part regarding damage.

Most ranchers feel the 30-day either sex season held in the southern portion of the unit from October 15 to November 15, 1952, will give some relief to deer depredation in the coming spring. Summer field observations

will be made to determine the results of this extended either sex season.

Job V-A-2: Collection and Analysis of Deer Stomachs in Ashland District
Job completion report attached.

Job V-B: Deer Population Studies of Carter Unit
Progress report attached.

Work Plan VI: Study of Introduced Mountain Sheep Herd in Missouri Breaks
Inactive during report period.

Work Plan VII: Census and Survey of Elk Herds in Eastern Montana

Job VII-A: Census and Survey of Established Elk Herds
Annual job completion report pending.

The extremely mild winter has not been favorable for the census of elk herds. They did not concentrate on their normal wintering grounds and although numerous counts have been attempted, none have been considered completely successful. Further attempts will be made following the the snow storm now prevailing.

Job VII-B: Investigation of Recently Introduced Elk Herds

1. Missouri River Breaks.
Elk were sighted on numerous occasions during flights over the Missouri Breaks area but no attempt was made to make a complete count. Unless the count can be accomplished under fresh snow conditions, a complete coverage survey would be impractical. With ideal conditions, large areas can be skipped over by a quick glance as only elk and horses are present to leave the distinctive pawing signs. Pawing marks left by deer are easily distinguished from those of elk.
2. Pine Ridge. Inactive during report period.
3. Rock Creek. Inactive during report period.
4. Knowlton. Inactive during report period.

Submitted by:

Approved by:

Name Don L. Brown

Montana State Department of Fish and Game

Title Biologist

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

JOB PROGRESS REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project W-1-R-12 (Eastern) Work Plan I Job No. I-A to C

Title: Post-Season Aerial Antelope Survey (Yellowstone Unit)

Dates: December 17, 18, 19, 1952

PERSONNEL:

G. O. Johnson, Deputy Game Warden
Webster Bridges, Rancher-Sportsman
Lawrence Erickson, Rancher-Sportsman
Don L. Brown, Biologist (Pilot)

OBJECTIVE:

To determine number of antelope in the areas shown on Map I.

PURPOSE:

Farmer-rancher complaints of an unusually heavy antelope population, utilizing alfalfa and winter wheat fields precipitated this survey. If the results of this aerial census revealed a greater than normal population, special permits were to be issued.

It is assumed that this area was the recipient of the antelope "lost" from the Musselshell Unit. (See Aerial Antelope Survey Quarterly Report January, 1953). If they were the lost antelope, it was logical to assume that the regular season did not adequately harvest the increase and another season was in order.

PROCEDURE:

A complete coverage survey was made of the area within the boundaries as shown on Map I.

Two ranchers living within the area alternated as observers on this survey.

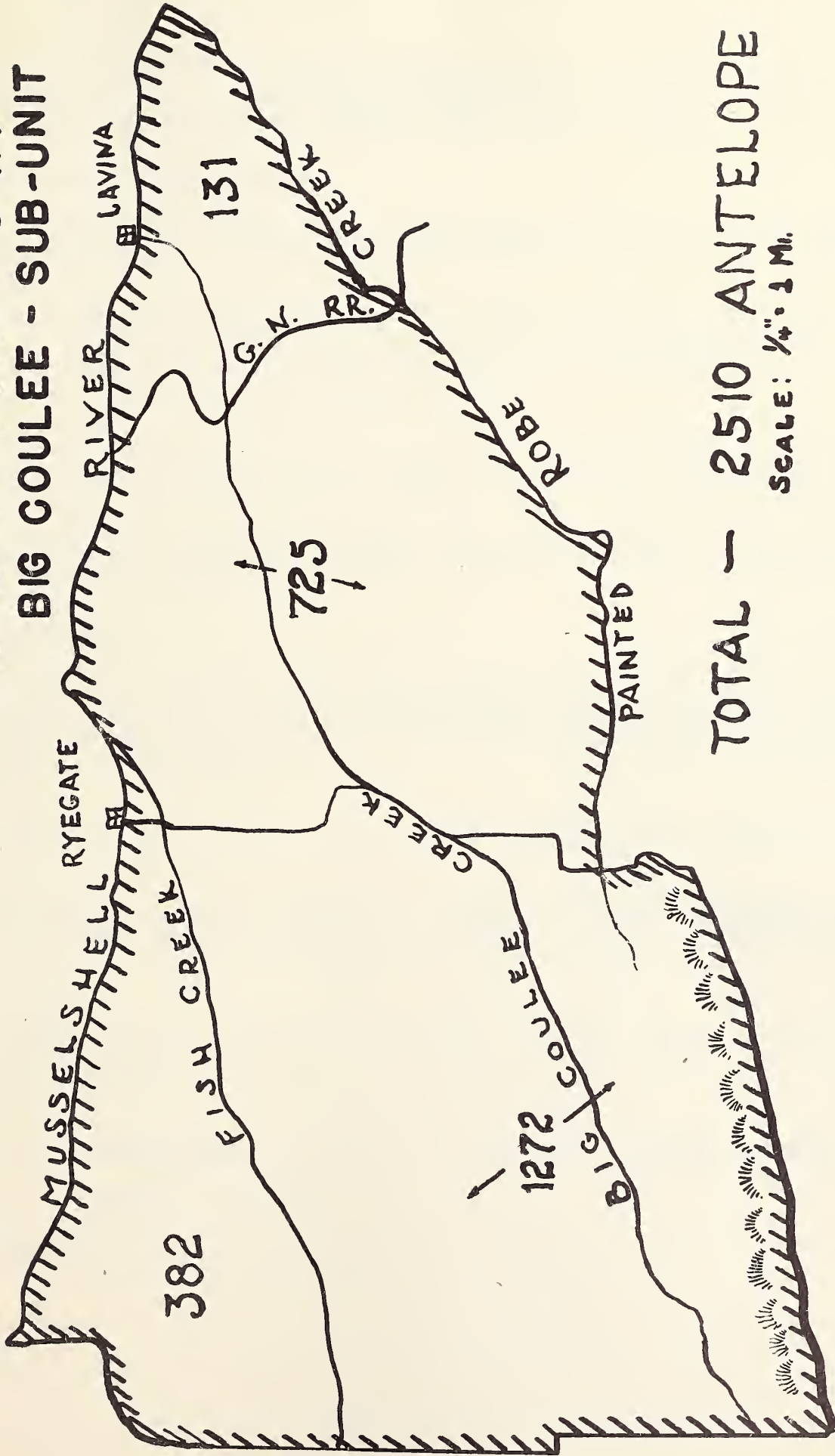
FINDINGS:

A total of 2,510 antelope were tabulated in the two areas that should normally carry a post-hunting season population of approximately 1,300 head. However, as a post-hunting season survey has never before been conducted in this area under similar conditions, the population can only be estimated from summer counts.

Absence of snow and extremely mild weather has caused antelope to

YELLOWSTONE UNIT BIG COULEE - SUB-UNIT

SHAWMUT



TOTAL - 2510 ANTELOPE
SCALE: 1/4" = 1 Mi.

spend much more time on agricultural crops, chiefly winter wheat, than normally. Cold weather and snow usually causes these antelope to migrate to areas of rough sagebrush type country at this time of year.

CONCLUSIONS AND RECOMMENDATIONS:

It would be unlikely that a population of this size would remain after the hunting season unless one of the following conditions prevailed:

1. Complete lack of hunting and light migration to the area.
2. Heavy migration into the area from all surrounding areas.
3. This area was the recipient of most of the antelope lost from hunting area eleven (1952).

One of the above will be established or indicated after the results of the Yellowstone Management Unit Census are tabulated. (Summer of 1953)

It was the concensus of opinion that approximately 1,000 permits should be issued to reduce and disperse the herds utilizing the winter wheat fields in the area described.

RESULTS OF SEASON:

A drawing was held in Ryegate, Montana, on December 20, 1952, for 1,000 either sex permits. Only 150 permits were issued on the day of the drawing but the remaining permits were sold on a first-come-first-served basis during the next week.

Based on a 10% random sample of hunters checked the following results were obtained:

Permits Issued	Cards Sent Out	Percent Return	Percent Successful	Percent Bucks	Percent Does	Computed Bucks	Kill Does
1,000	100	59	95	46.4	53.6	441	509

There is no way of determining which of those listed as bucks or does would be fawns.

Submitted by Don L. Brown

Approved by Robert F. Cooney

Robert J. Fischer

Date April 15, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-1-R-12 (Eastern)

Work Plan No. I

Job No. I-A to D

Title of Job: Aerial Antelope Survey (Musselshell Unit)

DATES:

July 28-31, 1952

August 1-9, 11-18, 1952

PERSONNEL:

Raleigh Shields, Deputy Game Warden
Joe Egan, Junior Biologist
Robert J. Fischer, Junior Biologist
Courtney Taylor, Deputy Game Warden (Pilot)
Don L. Brown, Biologist (Pilot)

OBJECTIVES:

1. To furnish reliable management data.
2. To improve census techniques.
3. To establish a natural loss and annual increase percent that is reliable.

TECHNIQUES USED:

This aerial survey was conducted several weeks later than the two former surveys in order to be sure that all of the fawns were moving with the herds. With all the fawns up and running, it was hoped wider strips would be successful. Wider strips led to a smaller percent of antelope classified (age and sex). This in turn may have introduced an error. (See conclusions.)

The area was flown in approximately the same manner as in 1948. (Summer Aerial Antelope Census, Quarterly Progress Report, October - December, 1948).

Area X was omitted because of low density and limited time. Areas I-A (Judith Basin County) and XXI (Fergus County) were added because of migrations from Musselshell Unit.

FINDINGS:

Map one shows unit and sub-unit boundaries and populations as

determined for 1952.

Map two is to compare subunits within the entire unit. Field notes and maps used in 1948 and 1950 were lost, thus comparison of each of the flight units is impossible.

Figure three summarizes the data of the three census years for comparison.

Figure four is a continuation of the chart using an annual increase of 61%, and a mortality other than hunting or trapping, of 13%.

The marked difference in the hypothetical and actual count in 1952 (Figure 4) can possibly be explained by a shift of antelope into the Yellowstone Unit. Partial counts in a portion of the Yellowstone Unit indicate that a movement has taken place. Verification and extent of this shift will be borne out in 1953 Yellowstone Unit Census.

Subsequent to the regular fall antelope season an additional harvest of 1,000 antelope was necessary in the Big Coulee area to relieve an abnormal increase. The congested area is immediately south of the area from which a migration was reported.

CONCLUSIONS AND RECOMMENDATIONS:

Antelope densities did not live up to expectations in the area north of Ryegate and Lavina. To eliminate the possibility of error a large segment of this area (575 square miles) was rechecked. A second count, four days later, agreed with the first survey.

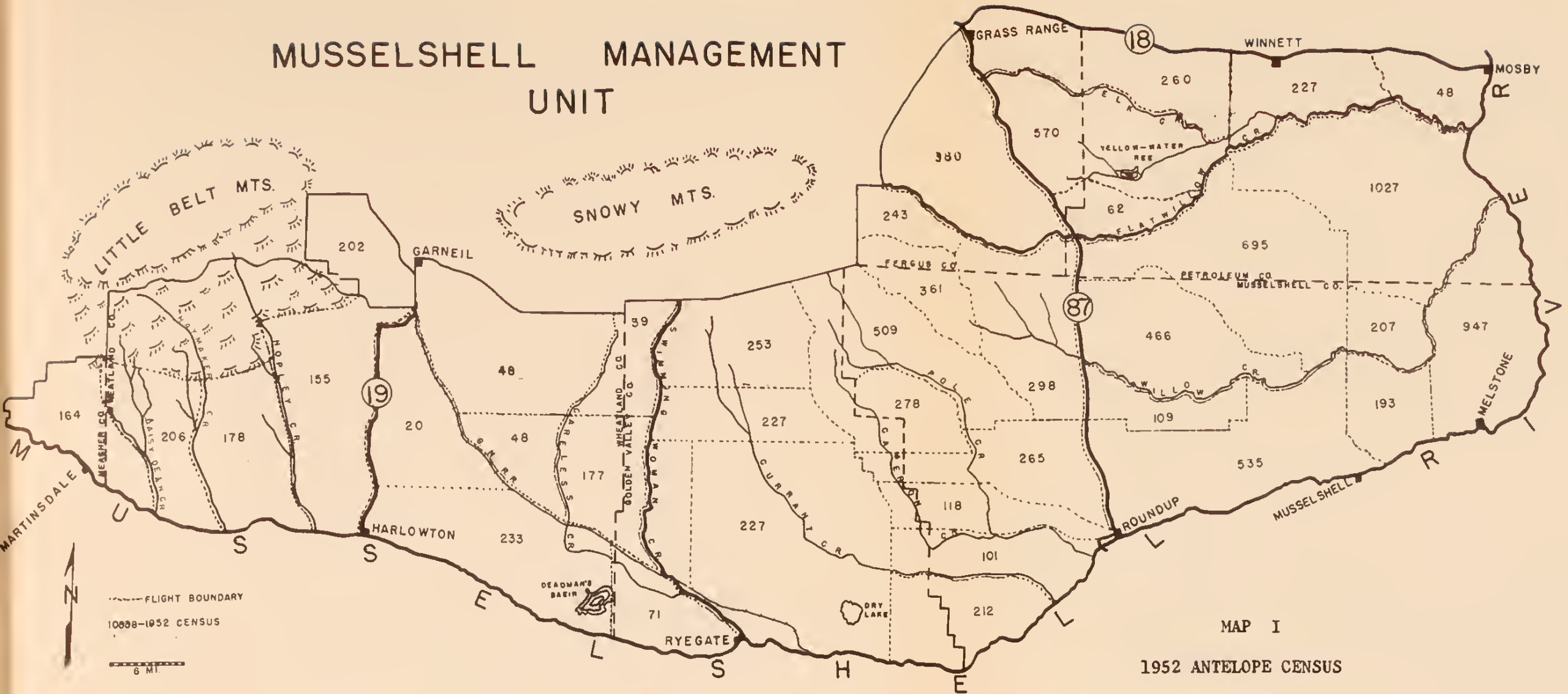
By the time the census was completed it was evident that either a general shift of antelope into another unit had occurred, or there was an extremely heavy mortality from unknown causes. No evidence was found to support a heavy mortality but the following evidence supports a shift:

1. Spot checks in the area south of Lavina and Ryegate indicate an abnormal concentration of antelope.
2. Climatic and forage conditions during the late summer of 1951 and winter of 1951-52, i.e., battering hailstorm and a severe winter, were not advantageous to antelope.
3. Information from residents of the Musselshell Valley indicate that several herds were observed drifting south during a winter storm.

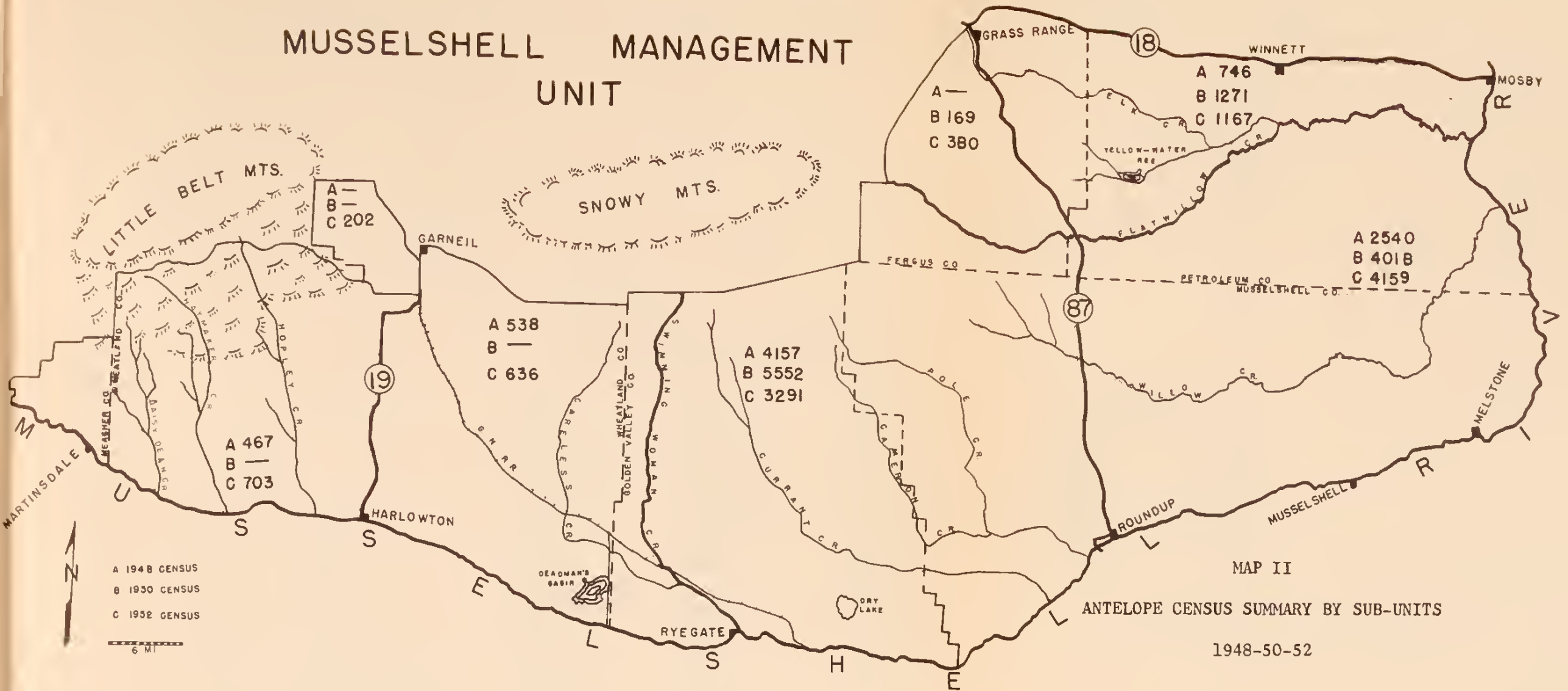
Thus, it is logical to assume there was a shift of antelope across the Musselshell River. Evidence to date indicates approximately 1,200 antelope moved out of the Musselshell Unit during the winter of 1952; this would result in a summer count shortage of 1,900 head. This phase of the project will be discussed again at the conclusion of the Yellowstone Unit antelope survey to be accomplished during the summer of 1953.

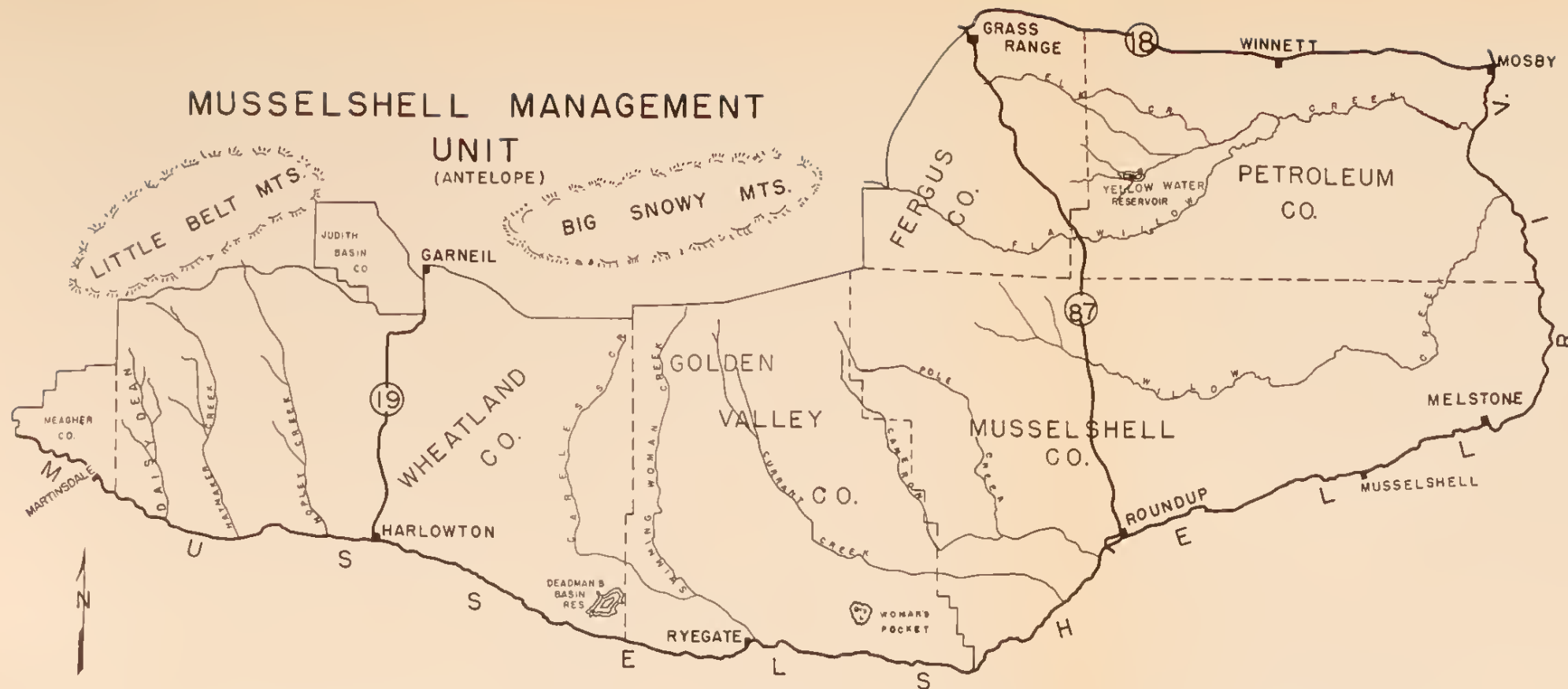
Hunting pressure in area number 11 (1952) was too heavy for the

MUSSEL SHELL MANAGEMENT UNIT



MUSSELSHELL MANAGEMENT UNIT





	1948	1950	1952	HARVEST
% CLASSIFIED	94 %	84 %	55 %	1948 - 705
% BUCKS	19.57%	21.69%	25.15 %	1949 - 1558
% DOES	43.34%	40.60%	37.15 %	1950 - 3500
% FAWNS	37.09%	37.71%	37.69 %	1951 - 3000
TOTAL BUCKS	1693	2388	2650	1952 - 3650
TOTAL DOES	3749	4470	3916	
TOTAL FAWNS	3209	4152	3972	
GRAND TOTAL	8,651	11,010	10,538	
BUCK:DOE RATIO	1:2.22	1:1.87	1:1.48	
DOE: FAWN RATIO	1:0.86	1:0.93	1:1.01	
% ANN. INCREASE	59 %	60.5 %	60.5 %	
SQ. MILE AREA	3497	2443	3607	
ANTELOPE / SQ. MI.	2.47	4.51	2.92	

FIGURE 3
-lla-

Figure 3 ANTELOPE CENSUS SUMMARY SHEET (MUSSELSHELL)

	1948		1950		1952	
	Actual Count	Computed Herd Class.	Actual Count	Computed Herd Class.	Actual Count	Computed Herd Class.
1. % herd Class.	1588	1693	1998	2388	1455	2650
2. % class. buck	19.57%		21.69%		25.15%	
3. % class. does	43.34%		40.60%		37.15%	
4. % class. fawns	37.09%		37.71%		37.69%	
5. Total bucks	3517	3749	3739	4470	2150	3916
6. Total does	3010	3209	3473	4152	2181	3972
7. Total fawns	536		1800		4752	
8. Total unclassified	8651	8651	11010*	11010	10538	10538
9. Grand Total	1:2.22		1:1.87		1:1.48	
10. B:D ratio	1:0.86		1:0.93		1:1.01	
11. D:F ratio	1:0.59		1:0.61		1:0.61	
12. Adult-Fawn ratio	59%		60.5%		60.5%	
13. %ann. inc.	3497		2443*		3607**	
14. sq. mi. area	2.47		4.51		2.92	
15. Ant. 1 Sq. Mi.						

*Does not include Wheatland and Neagher Counties

**Includes Subunits XXI and IA

FIGURE 4

	1948	1949	1950	1951	1952
Spring Herd	4,603 (4,603)*	5,835	6,817 (6,866)	6,504	6,851 (5,629)
Annual Increase (61%)	2,808 (2,808)	3,559	4,158 (4,208)	3,967	4,179 (3,368)
Summer Herd	7,411 (7,411)	9,394	10,975 (11,010)	10,471	11,030 (8,997)
Hunting and Trapping Losses	(705)	(1,558)	(3,500)	(2,596)	
Average Mortality ** (13%)	871	1,019	971	1,024	
Herd that Survived	5,835	6,817	6,504	6,851	

*Figures enclosed with brackets, known from census, or hunting and trapping records.

**Mortality at 13% of herd after deduction of hunting and trapping losses.

number of antelope present, due to this shift. This is one of the problems to be faced when seasons are set prior to the survey. In all other areas the ratio between hunters and antelope seemed to be nearly correct.

Based on incomplete card returns from hunting area 11, 540 buck hunters bagged 483 bucks, and 910 either sex hunters killed 387 bucks, 387 does and fawns, 86.7% successful. Thus, hunters removed 1,257 of the 3,290 antelope found during the summer count.

Comparing the success ratio of area 11, 86.7%, with the success ratio of adjoining areas: area 10 - 78.3%, 12 - 88.6%, 13 - 93.3%, and area 14 - 88.1%, this points to the vulnerability of the antelope, as it indicates that hunters will be successful despite a low density. To further stress a point the law of diminishing returns would not apply to antelope as it does to deer or any species seeking cover. Thus, it would be possible to nearly exterminate a herd of antelope by issuing too many permits.

In 1948 and 1950, 94% and 84% of all antelope observed were classified; to save time and to test techniques only 55% were classified in 1952. This may have introduced an error because the bucks are so easily identifiable in a group as compared to separating the does from fawns. For example, if the bucks were running in groups it was easy to distinguish that they were all bucks, while if there was a large group of mixed sexes and ages they were listed as unclassified to save time.

Therefore, it is recommended techniques be tested to determine the best method of arriving at the most accurate age and sex ratio with the lowest percent of classification.

It is recommended that hunting seasons boundaries be set to encourage light hunting in the southern portion of hunting area 11 (1952) and heavier hunting pressure along the foothills of the Snowy Mountains and Durfee Hills.

Slightly heavier hunting pressure should be applied to all other areas within the Musselshell Unit.

Prepared by Don L. Brown Approved by Robert F. Cooney

Date April 15, 1953

JOB PROGRESS REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project W-1-R-12 Work Plan I Job No. 1-A-D

Title of Job: Aerial Antelope Survey Yellowstone Unit
Southern Wheatland Sub-Unit

Dates: August 4 & 5, 1952

PERSONNEL: Robert J. Fischer, Jr. Biologist
Don L. Brown, Biologist (Pilot)

OBJECTIVE AND PROCEDURE:

This survey is designed to produce information relative to population dynamics of antelope as well as year to year management data.

This is the fifth year of aerial work accomplished in the Wheatland sub-unit of the Yellowstone Management Unit. It was intended that this area, censused on an annual basis, would furnish yearly information which might be lacking in the over-all biennial census of the entire Yellowstone Unit.

FINDINGS:

Figure I lists the antelope populations found within flight unit boundaries for 1952.

Figure II is a summary of population data for the entire sub-unit for the five year period.

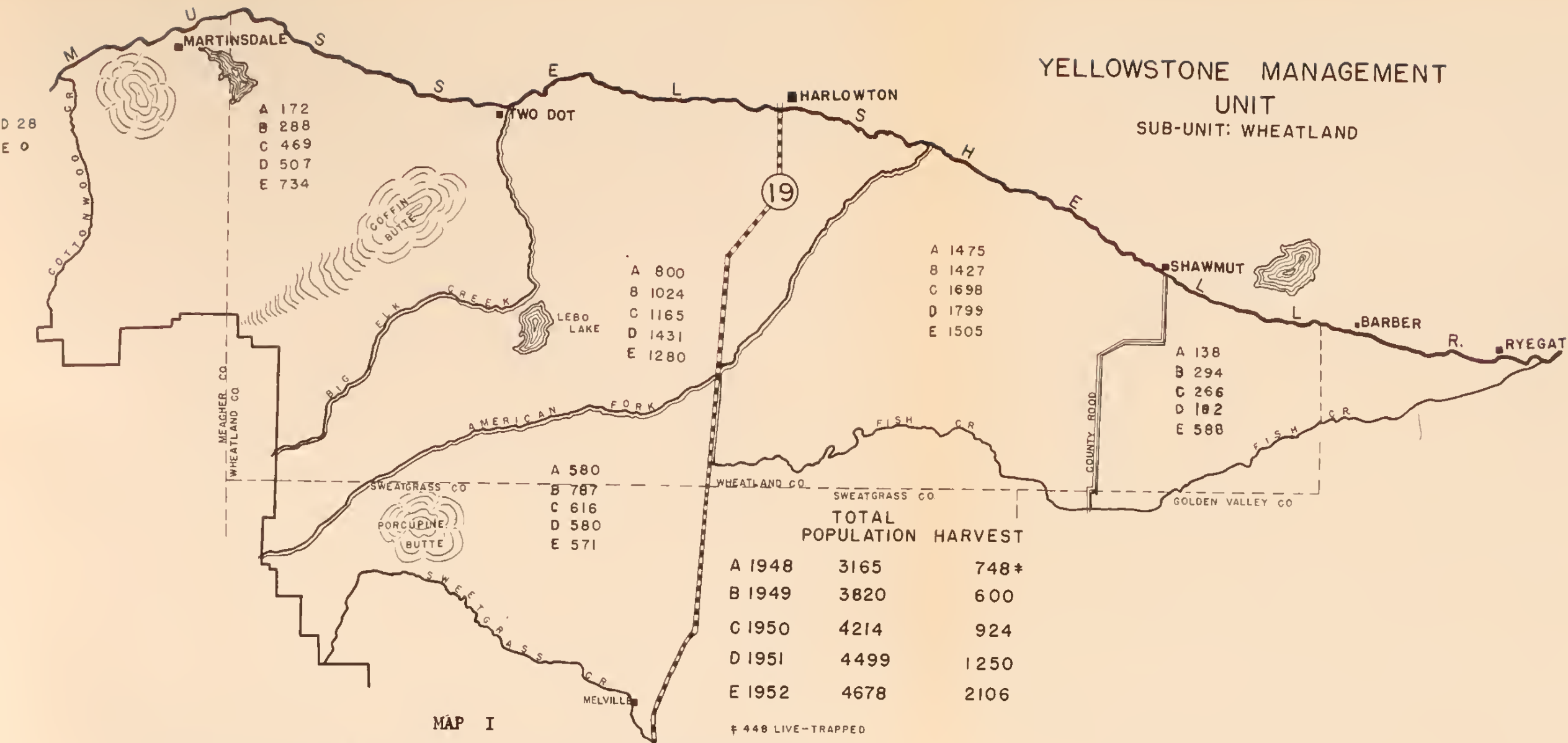
Map I compares populations within topographic boundaries shown during the five years of census.

Figure III is an analysis of card return data.

CONCLUSIONS AND RECOMMENDATIONS:

Although a part of this area is apparently a "buck pasture" during the time of census, it is believed the high percent of bucks is due in part to poor census technique. The ease with which bucks are identified, as compared to separating does and fawns in large groups, leads to the conclusion that many bucks are tabulated as such with some repetition from the unclassified list when computing percentages.

It is recommended a technique be developed to gather better sex and age ratios for this area. Antelope are too numerous to attempt 100% classi-



FIVE-YEAR SUMMARY OF SUMMER ANTELOPE POPULATIONS AND SUBSEQUENT HARVEST

1952 CENSUS SUMMARY

Flight-Unit	Uncl.	Female	Male	Fawn	Total	Sq.Miles	Ant./sq. mile
XIII	147	67	145	131	490	87	5.63
XIV	23	14	25	19	81	22	3.68
XV	184	33	26	27	270	50	5.40
XVI	53	21	35	39	148	22	6.73
XVII	243	144	176	171	734	107	6.86
XIX	458	131	46	61	696	80	8.70
XX	61	31	36	38	166	22	7.54
XXI	791	493	100	121	1505	127	11.85
XXII	218	72	150	148	588	66	8.91
TOTAL	2178	1006	739	755	4678	583	8.02

FIGURE I. ANTELOPE POPULATION BY FLIGHT UNITS FOR 1952.

SOUTHERN WHEATLAND COUNTY SUMMARY SHEET

CENSUS YEAR	TOTAL ANTELOPE	PERCENT CLASSIFIED	SEX AND AGE COMPOSITION				COMPUTED CLASSIFICATION			YEARLY HARVEST	% HERD HAR- VESTED
			% BUCKS	% DOES	% FAWNS	BUCKS	DOES	FAWNS			
1948	3165	None							748	23.6	
1949	3820	40.0	32.3	33.5	34.2	1234	1280	1306	600	15.7	
1950	4214	40.6	42.8	28.5	28.7	1804	1201	1209	924	21.9	
1951	4499	53.2	30.2	36.3	33.5	1359	1633	1507	1250	27.8	
1952	4678	63.5	40.2	29.6	30.2	1881	1385	1412	2106	45.0	

1948 Not classified
1949 34.23% herd -- fawns; 65.97% herd - adults; 52.07% annual increase
1950 28.73% herd -- fawns; 71.27% herd - adults; 40.33% annual increase
1951 33.51% herd -- fawns; 66.49% herd - adults; 50.42% annual increase
1952 30.2% herd -- fawns; 69.8% herd - adults; 43.2% annual increase

448 Live-trapped and transplanted

FIGURE II. FIVE-YEAR ANTELOPE POPULATION SUMMARY OF WHEATLAND SUB-UNIT

FIGURE III

RESULTS OF TEN PERCENT RANDOM SAMPLE QUESTIONNAIRE

HUNTING AREA	NO. PERMITS ISSUED	% SUCCESSFUL	% MALES	% FEMALES	COMPUTED KILL
Area 15					
West of Highway 19	300 bucks	74.1	100.0	---	222
	600 either sex	88.9	32.5	67.5	533
Area 16					
East of Highway 19	350 bucks	75.0	100.0	---	263
	555 either sex	95.9	53.3	44.7	532
Special December Season in east end of Area 16	300 either sex	94.1	50.0	50.0	282

fication, i.e., time spent circling groups for classification would cause other groups to start running with the result being duplication or missed antelope.

However, allowing for a discrepancy in computing the buck population, it still remains a fact that there is a surplus of males. It is recommended that in addition to the issuance of either sex permits, the number of bucks should be reduced by permit hunting (bucks only).

Figure III indicates a total of 1093 bucks were harvested from this area as compared to 739 does. The percentage of each that were fawns is not known.

The 13% discrepancy between harvest for 1952, as shown in Figure II and Map I, and the computed kill as shown on Figure III, is explained as follows: Insufficient evidence prior to the last two years made it impossible to compute the actual kill and evidence is still lacking on the actual crippling loss. Consequently, for the sake of comparing data, the kill (unknown), plus the crippling loss (unknown), was assumed to equal the number of permits issued.

The special season in December was designed to reduce the numbers of antelope on agricultural lands. Normally these antelope would have been on their winter range, but the mild, dry autumn caused the farmers to become quite concerned about the problem of antelope versus winter wheat.

Submitted by Don L. Brown

Approved by Robert F. Cooney

Robert J. Fischer

Date April 15, 1953

JOB PROGRESS REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-1-R-12 Work Plan III Job No. III-C

Title: Population Studies of Deer (Missouri Breaks)

Dates: Fall and winter

INTRODUCTION:

The deer herd referred to in this report is found on the west end of the Fort Peck Game Range and adjoining areas in the breaks of the Missouri River of northern Petroleum and Fergus and southern Phillips Counties.

The north side of the river (Phillips County) sustained a 12 day deer season of which the first three days were either sex. Petroleum County, south of the river, followed the same season, while the Fergus County season was bucks only for 30 days. Subsequent to the regular season, 500 permits were issued on antlerless deer in that portion of the area within Fergus County.

OBJECTIVE:

To supply information to formulate a better management plan for this deer herd, one that will produce the greatest sustained yield of deer without damage to forage.

PROCEDURE:

Pre- and post-season sex and age ratio aerial surveys, checking stations and postal card returns, along with estimates are presented to assist in formulating a management plan.

Due to errors and/or absence of forethought much of the data necessary for the population determination of this area is not available. Consequently, estimates based on field observations are used in order that the continuity of this study will not be interrupted.

FINDINGS:

Data presented includes both sides of the Missouri River unless otherwise specified.

TABLE I SEX AND AGE CLASSIFICATION (AERIAL)

		Unclassified	Bucks	Does	Fawns	B/D Ratio	D/F Ratio
1952	Pre-season	225	238	492	461	1:2.07	1:0.94
	Post-season	130	112	391	357	1:3.49	1:0.91
1951	Pre-season	448	172	211	263	1:1.23	1:1.25
	Post-season	12	80	211	261	1:2.64	1:1.24
1949	Pre-season	91	46	76	51	1:1.62	1:0.67
	Post-season	23	38	69	63	1:1.82	1:0.91

TABLE II 1952 DEER HARVEST

Area	Regular Season		Special Season		Harvest Combined
	Males	Females	Males	Females	
Fergus	MD 391			400	791
	WT 59			60	119
Petroleum	MD 286	104			390
	WT 26				26
Phillips	MD 597	552			1149
	WT 13	24			37
Total Kill	1372	680		460	2512

Fawns are included under male or female; checking stations and questionnaire cards did not specify age classification.

TABLE III SPECIES COMPOSITION AND SEX OF KNOWN KILL

County	Spp	Percent	Sex	Percent
Fergus	MD	87	Antlered	49.5
	WT	13	Antlerless	50.5
Petroleum	MD	92	Antlered	75
	WT	8	Antlerless	25
Phillips	MD	97	Antlered	51.4
	WT	3	Antlerless	48.6

Estimated 450 bucks removed during regular season.
 Special season kill based on card returns.
 Estimate from card returns (statewide)
 Checking station returns.

Tables IV, V, and VI and the accompanying map represent data obtained from checking stations in Phillips County.

TABLE IV HARVEST BY SEX AND SPECIES

Total Deer Checked		Males		Females & Fawns		Percent Total Deer Harvested
		No.	%	No.	%	
Mule Deer	1149	597	52.0	552	48.0	96.9
White-tailed	37	13	35.1	24	64.9	3.1
Totals	1186	610		576		100.0

May include a few male fawns.

Further classification of males as follows:

	<u>Mule Deer</u>	<u>White-tailed</u>
Mature males	197	8
Spikes and two points	302	5
Unclassified	98	0

Forty-five male fawns classified are included under females and fawns.

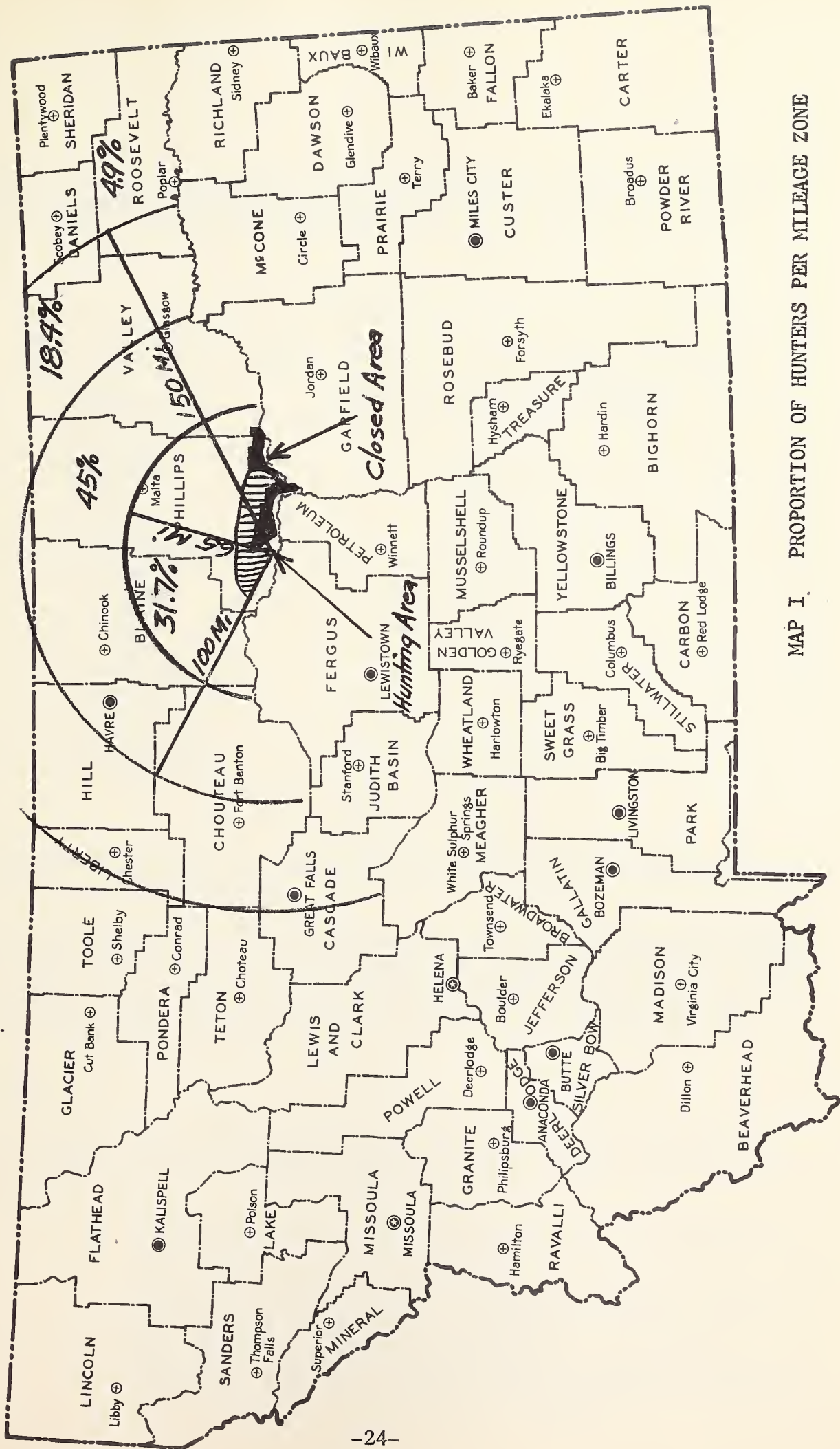
No tally was kept on the unsuccessful hunters at the checking stations, but there were 1186 successful hunters; 1149 of these were mule deer and 37 were white-tailed deer. Table IV shows that 44.1% (507) of the mule deer harvested were does, and 64.9% (24) of the white-tails were does.

TABLE V HARVEST BY DRAINAGES

<u>Drainage</u>	<u>No. Deer Harvested</u>
Rock Creek	341
Seven Mile Creek	152
Sipperary Ann Creek	149
C. K. Creek	92
Duval Creek	51
Antelope Creek	46
Nicols Creek	38
Bull Creek	28
Fergus County	13
Wilder	11
Beauchamps Creek	3
Hagen Flat	2
Reservoir Coulee	2
Big Warm	1
Fourchett	1

Total 930

MONTANA.



MAP I. PROPORTION OF HUNTERS PER MILEAGE ZONE

Table V shows the drainages along the Missouri River from which the deer were harvested. Rock Creek, which is perhaps the most accessible drainage, yielded 33% of the known kill.

TABLE VI

HOME COUNTIES OF HUNTERS CHECKING THROUGH CHECKING STATIONS

<u>County</u>	<u>Number of Successful Hunters</u>
Phillips	368
Valley	271
Hill	166
Blaine	88
Roosevelt	70
Daniels	47
Sheridan	15
Toole	6
Fergus	4
Flathead	3
Cascade	2
Silver Bow	1
Prairie	1
Yellowstone	<u>1</u>
Total	1043

Phillips County hunters represented 35.3% of the total hunters who harvested a deer from this area.

The accompanying map illustrates the percent of hunters with respect to distances traveled to the hunting area. The bulk of the hunters (76.7%) resided within a 165 mile radius of the hunting area. This area was open to either sex hunting from October 15 to October 17, and continued on bucks only through October 26, 1952.

CONCLUSIONS:

Application of the Kelker formula for determining total population as used by Donald Johnson (Montana Quarterly Report January 1952) did not seem advisable because of the following unknowns:

1. Checking stations in Phillips County did not separate female fawns from adult females.
2. Total kill figures for the regular season in Fergus County are not available, no checking stations. This also applies for Petroleum County.
3. Some figures are based on substantial information, others are founded on partly facts and partly estimates, and still others completely on estimates.

4. Card returns for special season did not distinguish between fawns and does or between white-tailed and mule deer.

The reduction in fawn:doe ratio over 1951 could be indicative of the effect a hard winter and dry spring has on the fawn crop.

The widening of the pre-and post-season sex ratios suggest increased hunting harvest.

Based on information available, the hunter harvest was comprised of less than 10% white-tailed deer. Females and fawns (combined) made up 45.4% of the kill while bucks comprised 54.6%.

The total kill based on checking stations and estimates was 2,512 deer. This could very reasonably be adjusted upwards to include hunters by-passing checking stations and local hunters.

Checking station reports indicated 60.6% of the males harvested were spikes and two points.

Over 90% of the deer harvested were killed during the first three days of the season. Successful hunters required an average of 1.71 days to bag a deer; 51% were successful in one day, 29% in two days, 15% in three days and only 5% required 4 days or longer.

Thirty-four calibers of guns were used ranging from .219 Zipper to a .38-40 Winchester. Leading the list with 31% was the 30.06; 30-30 was next with 24% and 270's were third with 11%.

RECOMMENDATIONS:

The present forage inventory and determination of carrying capacity of this area, being conducted by the Fish & Wildlife Service and Bureau of Land Management, should serve as a base for setting up a management plan. It is obvious that the growing popularity of the area demands that the maximum numbers of deer should be carried on a sustained yield basis. Consequently, information not available this past season but necessary for population determination should be collected in the future.

1. Checking stations should place more importance on keeping records on the number of unsuccessful hunters, positive determination of adults and fawns, incidence of female fawns as compared to male fawns, days spent hunting and at least a random sample collection of jaws for age determination.
2. If this area is to be considered as one deer herd, many more checking stations are needed for adequate information leading to better management.

3. Except from the standpoint of law enforcement, checking stations furnish very little information after the first week-end of hunting; therefore stress should be placed on opening days.

Submitted by: Don L. Brown

Approved by: Robert F. Cooney

Robert J. Fischer

Date: April 15, 1953

JOB PROGRESS REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-1-R-12 (Eastern) Work Plan No. V Job No. V-A

Title of Job: Population Studies of Deer (Powder River Unit)

Date: November, 1952, to March, 1953

PERSONNEL: Warren Linville, Deputy Game Warden
William Maloit, Deputy Game Warden
John B. Nicolay, Deputy Game Warden
Joe Egan, Junior Biologist

OBJECTIVES: 1. Ascertain post-hunting season deer densities.
2. Population shifts.

TECHNIQUES USED:

Coverage of the unit was not complete but restricted to certain "trend" areas. These areas are shown on Figure 1. Coverage was made both by auto and on foot. Because of an extremely mild winter, the deer were widely dispersed in the unit. Additional information was gained from interviews with dependable ranchers of the area.

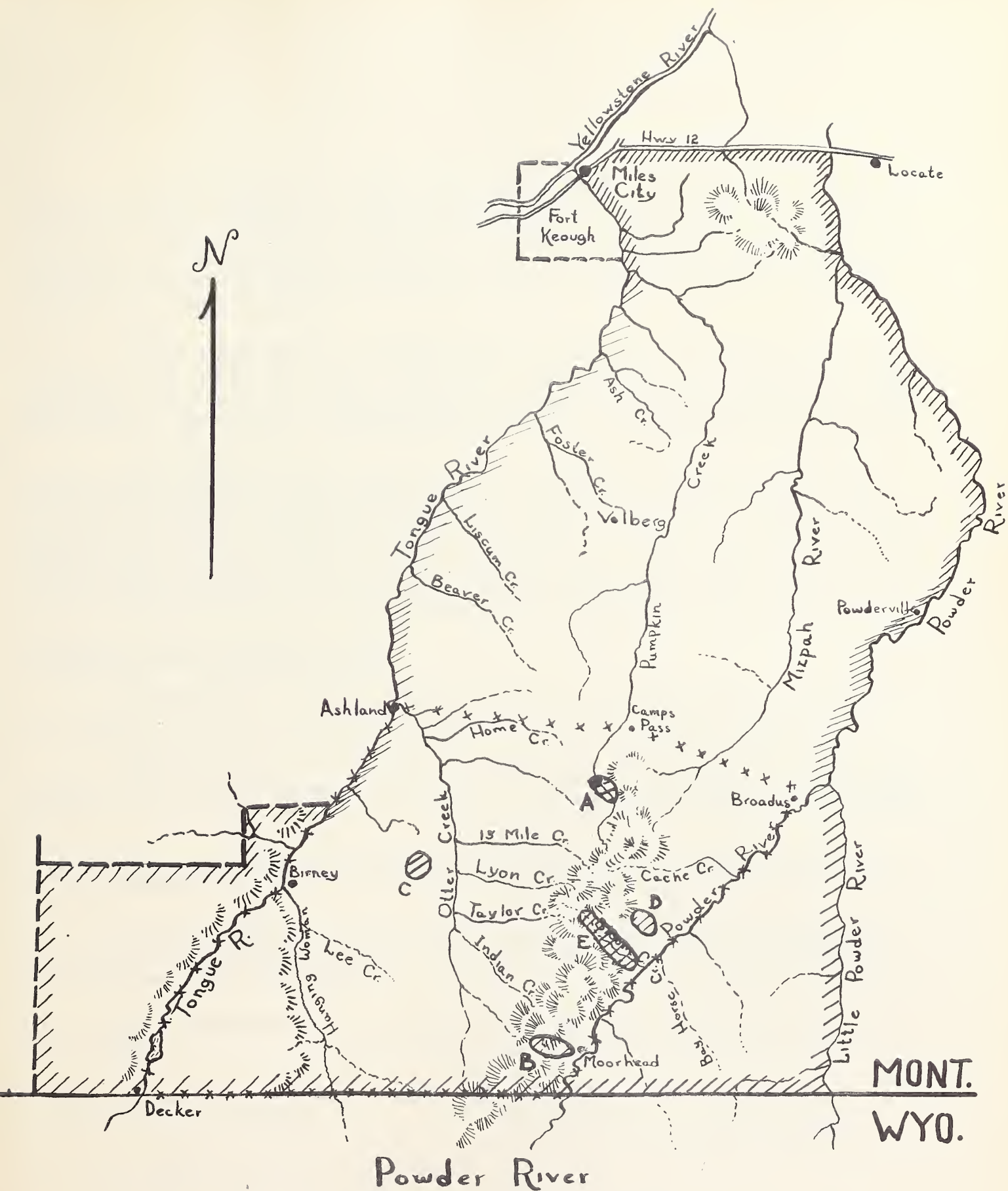
FINDINGS:

A field check on Upper Pumpkin Creek (Area A), on the day following the close of the 30-day either sex season, revealed the presence of a considerable number of deer. At the time of the check (early morning) there was three inches of fresh snow. In three areas totaling approximately 1.5 square miles, 26 tracks were observed. At the time of the check the snow was less than ten hours old, and all tracks indicated the deer would probably remain in the area.

This area had received considerable hunting pressure during the season. This could be attributed to a county road paralleling Pumpkin Creek in this area.

A field check in Area B was undertaken in December. A fresh snow four inches deep and 18 to 20 hours old existed at the time. Covering a distance of approximately ten miles by auto, with frequent stops to check the area on foot, a total of 42 tracks, a two-point buck and an adult doe were observed.

During December and January, several trips to Otter Creek (Area C) failed to disclose a very high deer population. Ranchers of the area reported little or no deer around haystacks. In Area C, an open meadow on the main divide between the Tongue River and Otter Creek, two does and four fawns were observed in late January.



Big Game Management Unit

//// Unit Boundary

Scale: ————— = 12 Miles

⊗ Trend Areas

Figure 1

xxx 30-Day Either Sex Boundary

From investigation Areas D and E appear to have substantial populations of deer. Although no extensive work has been done in D, it is believed to have a density similar to that of E. Of all areas investigated, Area E appeared to have the highest density. Two strips of seven and ten miles were traversed on two consecutive mornings by auto. Twenty and twenty-six deer respectively were observed.

Field observations disclosed very little over-utilization of browse in any of the areas mentioned. However, individual plants of Skunkbush (Rhus trilobata) and Snowberry (Symphoricarpos albus) exhibited moderate to heavy use, while plants of the same species in the vicinity showed slight or no use.

Although no extensive field work has been accomplished, there is evidence that the Fort Keogh Game Refuge, bordering the northwestern corner of the Powder River Management Unit, has a high deer density. Their numbers are under present conditions increasing without this increase being harvested. During June, July and August of 1952, many deer were seen feeding in the alfalfa fields adjacent to the Refuge. Future field work on this area may disclose a need for measures by which harvest in the Refuge can be undertaken.

CONCLUSIONS AND RECOMMENDATIONS:

In spite of a 30-day either sex season, in the southern portion of the management unit, a substantial deer population is still present.

Observations tend to indicate a migration to the Powder River breaks occurs during periods of adverse weather. Continued field work will determine this.

From observations regarding forage utilization, there appears to be no over-population of deer in the areas investigated.

Present numbers of deer in the southern portion of the management unit indicate an either sex season during the coming fall will not be detrimental to the deer population.

More information is needed regarding the deer in the Fort Keough Game Refuge.

Submitted by Joe Egan

Approved by Don L. Brown

Date March 24, 1953

JOB PROGRESS REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-1-R-12

Work Plan No. V

Job No. V-A-2

Title of Job: Collection and Analysis of Deer Stomachs in Ashland District (Powder River Unit)

Date: September to October, 1952

PERSONNEL: William Maloit, Deputy Game Warden
Joe Egan, Junior Biologist

OBJECTIVES:

1. To ascertain the extent of damage caused by deer feeding on alfalfa grown for seed and hay.

TECHNIQUES USED:

Deer were collected in and adjacent to alfalfa fields known to be used by them. An effort was made to collect the deer from several fields in the following manner: One deer in the evening prior to entering a field; one that had actually been feeding in a field for several hours; and one in the early morning as it was leaving a field. To avoid biased sampling, an attempt was made to collect the first deer observed for each collection time.

In removing the stomach samples, the contents of the rumen were thoroughly mixed and an amount sufficient to fill a quart container $\frac{3}{4}$ full was taken. Formaldehyde and water were used to preserve the sample.

The samples were sent to the Division of Fish and Game Laboratory, University of California, Berkeley 4, California for analysis.

All eight samples were those of mule deer. Carcasses were given to charitable institutions.

FINDINGS:

Table I gives the analysis of the samples and Figure 1 gives the location of collection areas.

Table II lists the analysis of samples taken from Rosebud County in the Custer Big Game Management Unit.

Powder River and Rosebud Counties

TABLE I

<u>Data</u>		<u>Common Name</u>	<u>Scientific Name</u>	<u>Percent</u>
Coll. No.	EG-1	Snowberry	Symphoricarpos albus (leaf, fruits)	76
Time	9/2/52 5:45a	Alfalfa	Medicago sativa (leaf, fruits)	10
Location	Otter Creek	Sweet Clover	Melilotus alba (leaf, seeds)	10
Condition	Leaving Alfalfa	Oyster plant	Tragopogon pratensis (leaf, seeds)	4
Sex	Good Fawn Female	Mustard	Thlaspi arvense (seeds)	trace
		Tumbling mustard	Bromus sp. (seeds)	trace
		Cherry or plum	Sisymbrium sp. (seed)	trace
		Squaw bush	Prunus sp. (leaf)	trace
		Rabbit brush	Rhus trilobata (leaf)	trace
			Chrysothamnus nauseosus (leaf)	trace
			Unid. green leaf (forb sp.)	trace
Coll. No.	EG-2	Squaw bush	Rhus trilobata (leaf, seeds)	90
Time	9/1/52 8p	Snowberry	Symphoricarpos albus (leaf, fruits)	10
Location	Otter Creek	Pine	Pinus sp. (dry needles)	trace
Condition	Entering Alfalfa	Alfalfa	Medicago sativa (seeds)	trace
Sex	Fair Adult F. (wet)	Rabbit brush	Chrysothamnus nauseosus (leaf, invlcr)	trace
		Cockle-burr	Xanthium sp. (seed)	trace
			Green leaf (forbs sp.)	trace
Coll. No.	EG-3	Squaw bush	Green leaf (forb sp.)	60
Time	9/10/52 1:30a	Snowberry	Rhus trilobata (leaf)	35
Location	Otter Creek	Rose	Symphoricarpos albus (leaf, fruit)	5
Condition	Good	Rabbit brush	Rosa sp. (leaf)	trace
Sex	Adult Male		Chrysothamnus nauseosus (leaf)	trace
Coll. No.	EG-4	Alfalfa	Medicago sativa (leaf)	80
Time	9/12/52 8p	Snowberry	Symphoricarpos albus (leaf, fruits)	12
Location	Ten Mile Creek	Squaw bush	Rhus trilobata (leaf)	8
Condition	Alfalfa Meadow	Oyster plant	Tragopogon pratensis (seed)	trace
Sex	Excellent Adult Female	Rose	Rosa sp. (leaf)	trace
		Cherry or plum	Prunus sp. (leaf)	trace
		Rabbit brush	Chrysothamnus nauseosus (leaf)	trace

TABLE I (continued)

<u>Data</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Percent</u>
Coll. No.			
Time	EG-5	Rhus trilobata (leaf)	48
Location	9/26/52 8p	Symphoricarpos albus (leaf)	34
	Ten Mile Creek	Medicago sativa (leaf)	18
Condition	Alfalfa Meadow	Gramineae (green)	trace
Sex	Excellent		
	Adult Male		
Coll. No.			
Time	EG-6	Symphoricarpos albus (leaf, fruits)	50
Location	9/27/52 6:30 a	Medicago sativa (leaf, stems)	30
	Ten Mile Creek	Chrysothamnus nauseosus (leaf, involucre)	12
Condition	Leaving alfalfa	Rhus trilobata (leaf, seeds)	8
Sex	Excellent	Carex sp. (leaf)	trace
	Fawn Female	Rosa sp. (leaf)	trace
		Green leaf (forbs sp.)	trace
		Prunus sp. (leaf)	trace
	Cherry or plum		
Coll. No.			
Time	EG-7	Symphoricarpos albus (leaf)	70
Location	10/2/52 9:45 p	Artemisia cana (leaf)	28
	Otter Creek	Green leaf (forbs sp.)	2
Condition	Entering Alfalfa	Gramineae (dry)	trace
Sex	Good	Rosa sp. (leaf)	trace
	Adult Female (wet)	Prunus sp. (leaf)	trace
		Medicago sativa (seeds)	trace
		Rhus trilobata (leaf)	trace
		Xanthium sp. (seed)	trace
Coll. No.			
Time	EG-8	Medicago sativa (leaf)	90
Location	10/2/52 11:45p	Rhus trilobata (leaf)	8
	Fifteen Mile Creek	Symphoricarpos albus (leaf, fruits)	2
Condition	Leaving Alfalfa	Bromus sp. (seed)	trace
Sex	Good	Gramineae sp. (green)	trace
	Adult Female (wet)	Rosa sp. (leaf)	trace

A trace is less than 1%.

TABLE II

<u>Data</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Percent</u>
Coll. No.	MA-1	Symphoricarpos albus (leaf, fruits)	74
Time	10/6/52 9 pm	Unid. Compositae (leaf, stems, involucre)	15
Location	Armells Creek	Medicago sativa (leaf, seeds)	10
Condition	Alfalfa meadow	Chrysothamnus nauseosus (leaf)	1
Sex	Excellent	Amaranthus sp.	trace
	Adult Male	Bromus sp. (seed)	trace
		Rosa sp. (leaf)	trace
		Green leaf (forbs sp.)	trace
Coll. No.	MA-2	Medicago sativa (leaf, seeds)	97
Time	9/3/52 11p	Symphoricarpos albus (leaf, seeds)	2
Location	Armells Creek	Rhus trilobata (leaf, seeds)	1
Condition	Alfalfa meadow	Bromus sp. (seed)	trace
Sex	Excellent	Rosa sp. (leaf)	trace
	Adult Male	Green leaf (forbs sp)	trace
Coll. No.	MA-3	Lactuca sp. (mostly stems, seeds, involucre)	68
Time	8/28/52 5:50a	Melilotus alba (leaf seeds)	30
Location	Armells Creek	Symphoricarpos albus (fruits, leaf)	2
Condition	Sage Flat	Gramineae (green)	trace
Sex	Poor	Bromus (seed)	trace
	Adult Female	Chenopodium sp. (seed)	trace
		Rhus trilobata (leaf)	trace
		Euphorbia sp. (leaf)	trace
		Solanaceae (seeds of Physalis sp. or Solanum sp)	trace
Coll. No.	MA-4	Medicago sativa (leaf, seeds)	55
Time	9/3/52 10:15p	Rosa sp. (leaf)	45
Location	Armells Creek	Symphoricarpos albus (leaf)	trace
Condition	Alfalfa meadow	Artemisia sp. (leaf)	trace
Sex	Excellent	Green leaf (forbs sp.)	trace
	Adult Male		

TABLE II (continued)

<u>Data</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Percent</u>
Coll. No.	MA-5	Medicago sativa (leaf, seeds)	43
Time	9/16/52 1a	Symphoricarpos albus (leaf, seeds)	35
Location	Armells Creek	Rhus trilobata (leaf)	20
Condition	Alfalfa meadow	Green Leaf (forbs sp.)	2
Sex	Excellent	Bromus sp. (seed)	trace
	Fawn Female	Rosa sp. (leaf)	trace
		Unid. leaf (browse sp.)	trace
Coll. No.	MA-6	Medicago sativa (leaf, seeds)	97
Time	8/31/52 11:15p	Rhus trilobata (leaf)	3
Location	Armells Creek	Symphoricarpos albus (leaf, fruits)	trace
Condition	Alfalfa Meadow	Bromus sp. (seeds)	trace
Sex	Excellent	Green Leaf (forbs sp.)	trace
	Adult Male		
Coll. No.	MA-7	Rhus trilobata (leaf, seeds)	49
Time	10/11/52 6:15a	Symphoricarpos albus (leaf)	30
Location	Armells Creek	Medicago sativa (leaf, seeds)	20
	Grassland	Yucca glauca (fruit, seed fgmts.)	1
	(leaving Alfalfa)	Green leaf (forbs sp.)	trace
Condition	Excellent		
Sex	Adult Female		

A trace is less than 1%.

Samples EG-1 through EG-3 were taken from area A (see Figure 1), EG-4 and EG-5 are from area B, EG-6 from area C, EG-7 from area D, and EG-8 is from area E.

Area A is located in a valley about $\frac{1}{4}$ mile wide, where the alfalfa is grown immediately adjacent to Otter Creek. The remainder of the valley consists of a grassland-sage association, which is bordered by the Eastern Montana Ponderosa pine forest. Areas B and C are similar to Area A, except the grassland-sage association is more extensive and the valley is 1 - 2 miles wide. Area D has a very extensive grassland-sage association, with a valley width of 3 - 4 miles, while Area E is located in a valley 300 - 400 yards wide and has a small grassland-sage association.

Samples EG-2, EG-3 and EG-7 were taken from rumens which appeared to be half to three-quarters full, EG-8 was taken from a rumen that was considered as gorged, and the remaining rumens were classified as normally full.

All animals were in good to excellent condition, except EG-2 (a wet doe). Her condition, even though she was lactating, was poor.

In every case, there was water either adjacent to or very near the collection areas, an exception being area C, where water was about a mile south. Previous observations indicated the deer bedded down during the day about three-fourths to one mile from the alfalfa fields. In the vicinity of the bed grounds there was a shortage of water, since many springs and reservoirs had gone dry. The primary attraction for the deer therefore, is thought to be water in these and similar areas of the unit.

The data at hand, although not extensive, indicates some deer are eating a considerable amount of alfalfa. These deer may be some that have the "alfalfa habit". Tables I (and II), indicate that deer in sufficient numbers on such fields could cause extensive damage.

CONCLUSIONS AND RECOMMENDATIONS:

Damage to alfalfa crops is probably lessened during periods of normal precipitation.

To keep damage at a minimum the deer populations should be kept below the present densities existing in areas adjacent to alfalfa fields in the Powder River Unit.

It is recommended that interviews with dependable ranchers and field investigations be the method of obtaining data to apply to this phase of game management. This might be supplemented with year-round collection of stomach samples and fenced enclosures on these fields.

Submitted by: Joe Egan Approved by Don Brown

Date March 24, 1953

JOB PROGRESS REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-1-R-12 Work Plan No. V Job No. V-B

Title of Job: Population Studies of Deer (Carter Unit)

Date: August, 1952, to March, 1953

PERSONNEL: George Hollibaugh, Deputy Game Warden
Joe Egan, Junior Biologist

OBJECTIVES:

1. Establish population density in Custer National Forest (Sioux Division) and adjacent areas.
2. Determine results of special deer season in Forest.
3. Ascertain compatability of present deer numbers to existing agricultural practices.

TECHNIQUES USED:

In August, 1952, a trip was made into the area for familiarization and to interview ranchers. In October a spotlight count was made. In November, during the special eithersex season (November 10-23 incl.) an effort was made to contact hunters in the field to secure data relative to hunter success. This was abandoned in favor of special season card returns. Six areas in the southern portion of the forest were covered on foot during January. An aerial census of the entire forest was undertaken during March.

FINDINGS:

Investigations and interviews revealed some utilization of alfalfa by deer in the area. Some ranchers expressed the desire to have the deer numbers reduced. It was felt the nine day buck season (November 1-9) plus the 13 day either-sex season (November 10-23) would satisfactorily accomplish a reduction. Investigations during the coming spring and summer will determine this.

During spotlight counts in October, 1952, fifty head of deer were observed. This count was restricted to the areas shown in Figure 1. The total area covered was 21 square miles. Observations in the Forest did not disclose any over-browsed conditions.

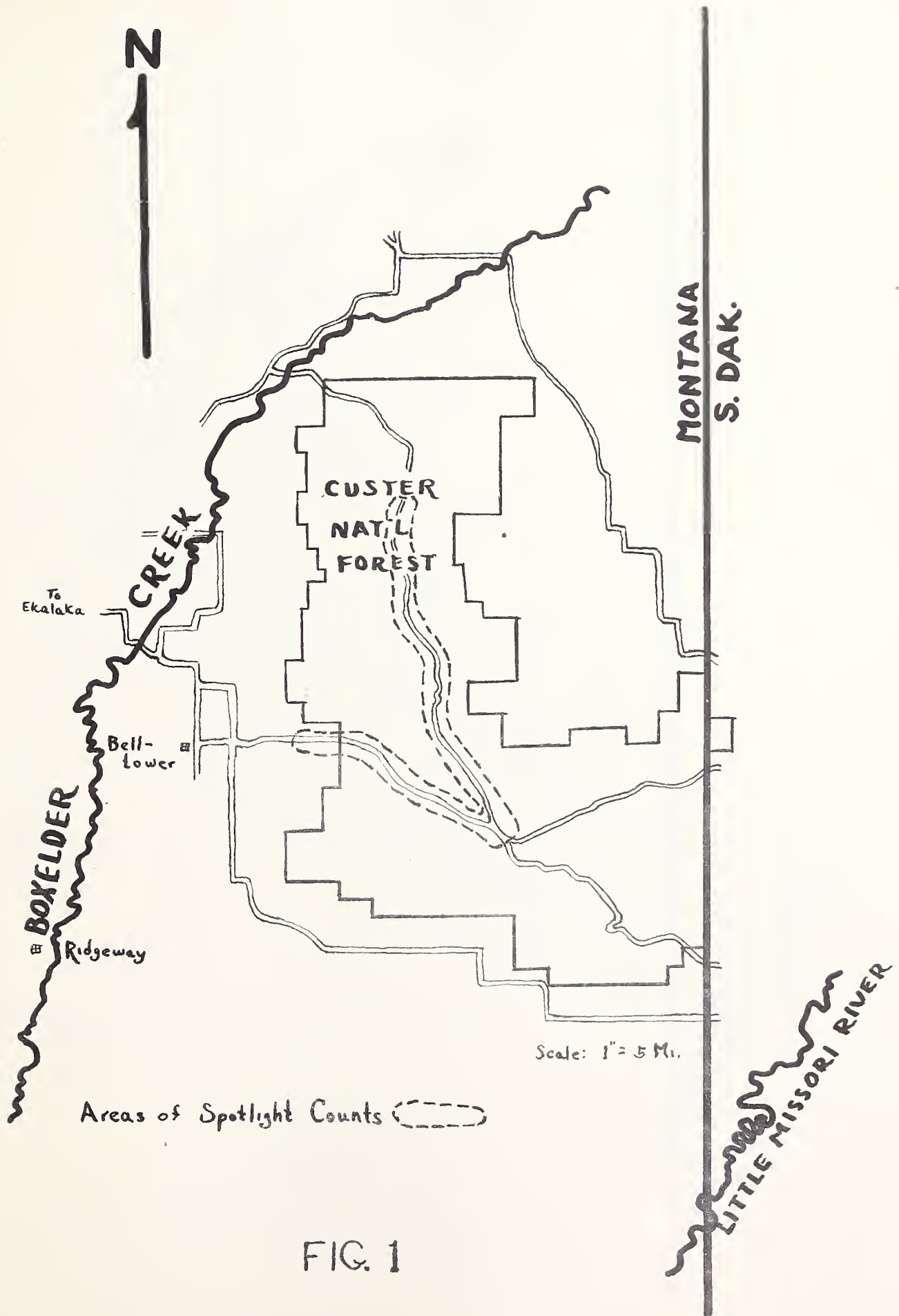


FIG. 1

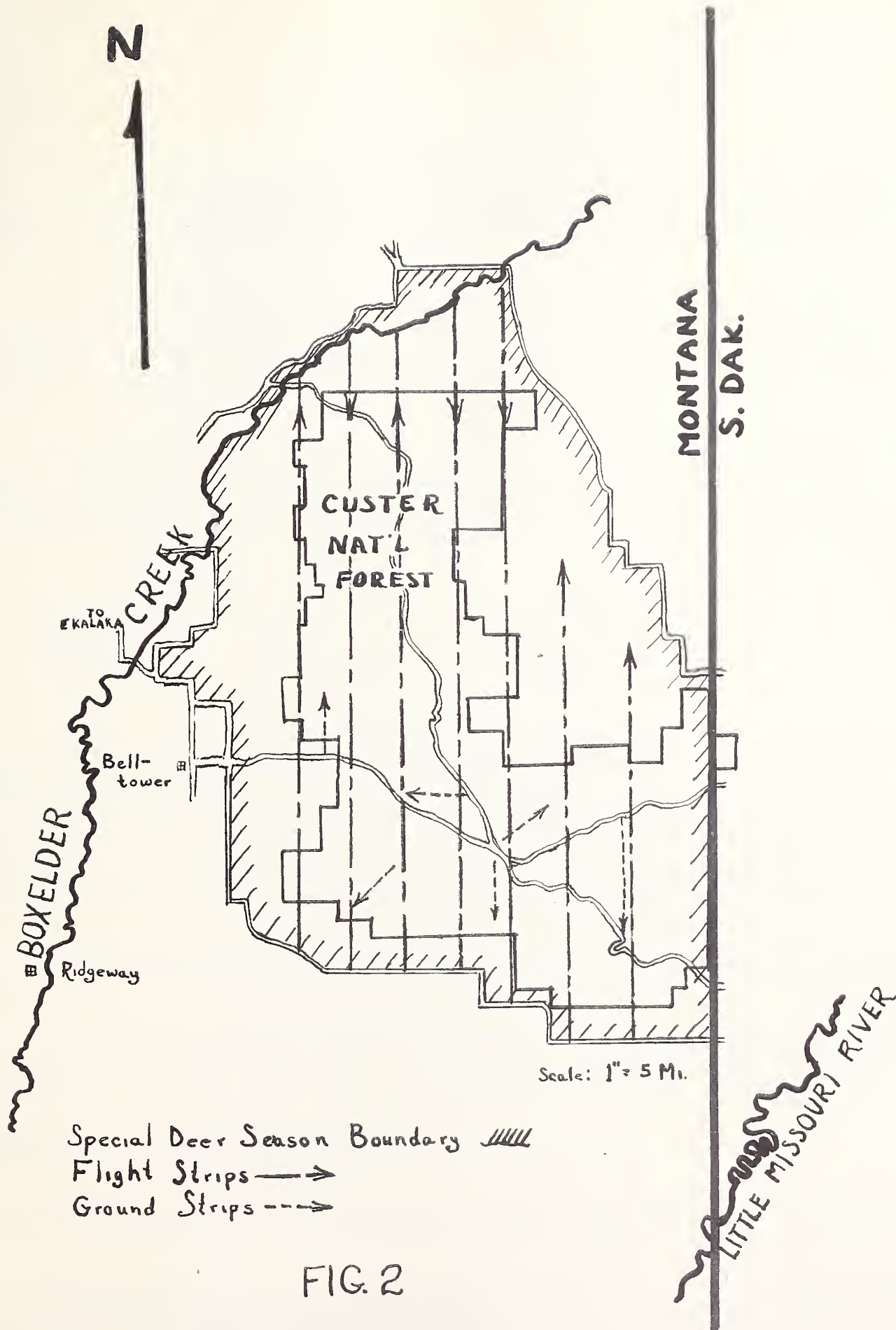


FIG. 2

Since no checking stations were operated in the area during the nine day buck season (November 1-9, inclusive), the kill is not known. During the special season (November 10-23, either sex) it is estimated 133 deer were killed. This is based on card returns.

Two hundred permits were issued, cards were sent to twenty permit holders (10% sample) and 18 cards were returned (90% return). Calculations from information gained by the cards indicate 133 hunters were successful, or a hunter success of 66.7%. Using the card return information, there were 67 does and 66 bucks taken out during the special season.

On January 22 and 23 six ground strips were covered on foot. Five of these strips were two miles in length, and one was four miles in length (see Figure 2). The total area covered was approximately 3.5 square miles. The total number of deer observed was 32. They are classified as follows:

<u>Mule Deer</u>		<u>White-Tail</u>	
Adult Males	5	Adult Males	4
Adult Females	6	Adult Females	2
Fawns	8	Fawns	3
Unclassified	2	Unclassified	2

The aerial census on March 6 and 7 covered an area of 102 square miles. Total number of deer seen was 29. Sixty-eight percent of this number was observed in the southern portion of the censused area. Since antlers are shed during this time no attempt was made to sex the animals. Although the census was not considered very successful in obtaining deer density, it was successful in ascertaining which areas should be subjected to this type of census in the future. It is believed that aerial census from January to March should be confined to the southern portion of this forest in the future.

A mild winter and lack of existing trend data for the area make it impossible to arrive at any definite conclusions.

Preliminary investigations have revealed a substantial deer population on Box Elder Creek. Fifty-seven deer were observed between Ridgeway and Belltower, on a five mile strip of the Creek. Additional investigations will give a better account of this area.

CONCLUSIONS AND RECOMMENDATIONS:

Further investigations are needed to establish criteria by which the deer of Custer National Forest (Sioux Division) can be managed.

Present data tends to indicate a low population of deer in the northern portion of the Forest, and a rather high concentration of deer in the southern portion at present. Investigations and rancher interviews prior to the 1953 hunting season will ascertain the type and length of season needed for this area.

Submitted by Joe Egan
Date March 24, 1953

Approved by Don L. Brown

STATE Montana
PROJECT NO. W-1-R-13
DATE April 15, 1953
VOL. IV NO. I

QUARTERLY PROGRESS REPORT FOR

INVESTIGATIONS PROJECTS

As Required By

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Wildlife Surveys and Management -- Western Montana
2. Leader: Phillip B. Marshall, Junior Biologist

Herman Ogren, Junior Biologist

3. Report of Progress:

Work Plan I: Big Game Population Studies

Job I-A: Big Game Survey in South Fork of Flathead, Swan, Black-foot and Adjacent Areas

This work is currently in progress and will be reported the following report period.

Job I-B: Big Game Survey in the Bitterroot, Rock Creek, Fish Creek, Thompson Falls, Cherry Creek and Adjacent Areas

This work is currently in progress and will be reported the following report period.

Work Plan II: Big Game Reproduction, Age Classification, and Hunter Utilization

Job II-A: Age Classification and Herd Rate of Increase

Reported in the October-December 1952 Quarterly.

In addition, the deer reproductive tracts collected during the 1952 hunting have been analyzed and the results compared with the doe:fawn ratios calculated from hunter kill data.

Checking Station	No. of Sets of Ovaries	Doe:Fawn Ratio by Ovarian Analysis	Doe:Fawn Ratio by Hunter Kill
Bonner	10	1:4	.3
Lincoln County*	22	.93	1.05

* Includes Island Lake, MacGregor Lake, and Waylett checking stations

- Job II-B: Hunter Utilization
Reported in October-December 1952 Quarterly Report.
- Work Plan III: Study of the Migratory Habits of Big Game in Key Areas
- Job III-A: Tagging and Release of Mature Elk on the Blackfoot Game Range
Completion report attached.
- Job III-B: Tagging and Release of Mature Elk in the Bitterroot
Elk did not occur in large enough numbers this winter to make trapping feasible.
- Job III-C: Tagging and Release of Elk in Upper South Fork of Flathead River
Completion report attached.
- Work Plan IV: Range Inspection and Browse Measurements
- Job IV-A: Forage Utilization on Key Areas
Inactive.
- Job IV-B: Range Condition Survey
This work is being done in conjunction with winter game surveys and will be reported the following report period.
- Work Plan V: Rocky Mountain Sheep Investigation
Progress report attached.
- Work Plan VI: Rocky Mountain Goat Investigation
- Job VI-A: Study of Movements and Migration
Inactive during report period.
- Job VI-B: Age Determination by Tooth Wear and Replacement
Prior to the opening of the 1952 goat hunting seasons, letters were sent to all licensed taxidermists in the state asking them to save the lower jaws of any goat heads that they received for mounting. After the close of the hunting season, the taxidermists were contacted for any jaws they had saved.
- Five taxidermists in western Montana were contacted and five lower jaws thus obtained. These jaws will be used to build up a collection of jaws from which it is hoped a method of age determination may be developed.
- Job VI-C: Sex Ratio and Herd Reproduction Studies
Inactive during report period.
- Job VI-D: Study of Mountain Goat Winter Range Distribution
Completion report attached.

Work Plan VII: Aerial Salt Distribution

Reported in the April-June, 1952 Quarterly under
Project 26-M.

Work Plan VIII: Characteristics of Natural Licks Used by Wildlife in
Montana

Job VIII-A: The preliminary results of the natural lick investigations
as outlined under the project work plan was presented in a
paper at the Eighteenth North American Wildlife Conference
in Washington, D. C. March 9, 1953. This report paper, plus
additional illustrative material, has been prepared as a
wildlife restoration progress report and is submitted separately.

Submitted by:

Approved by:

Name Phillip B. Marshall

Montana State Department of Fish and Game

Title Junior Biologist

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-1-R-13

Work Plan No. III

Job No. III-A

Title of Job: Tagging and Release of Mature Elk on the Blackfoot Game Range

OBJECTIVES: Tag and release as many elk on the Blackfoot Game Range as possible. Recover tags at checking stations and analyse data for migration.

PROCEDURE:

1. Portable elk trap was used.

RESULTS:

A total of 16 elk was caught, tagged and released between December 17, 1952 and January 2, 1953. Of these, 6 were elk that had been tagged the previous year.

Six elk that had been tagged the previous year were killed by hunters during the 1952 hunting season and the tags were recovered. They had been killed on the game range.

Prepared by Phillip Marshall

Approved by Robert F. Cooney

Date April 15, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-1-R-13 Work Plan No. III Job No. III-C

Title of Job: Tagging and Release of Elk in Upper South Fork of Flathead River

OBJECTIVES: To determine movements of South Fork elk.

PROCEDURE: Repair trap on Danaher Flats.
Fly hay and protein cake to area, using large plane.
Operate trap by landing 125 Super Cub nearby.

RESULTS:

On January 4, preparations were begun to operate the elk trap on Danaher Flats. Tools, equipment, hay, protein cake, salt and other supplies were flown to the area, using a large plane. The hay, salt and protein cake were air-dropped at the trap while the remainder of the supplies and tools were pulled on a toboggan from the landing field to the Danaher Guard Station which served as headquarters for the work.

The trap was repaired and some modifications were made. The main gate, which had been a swinging drop gate, was changed to a side swinging gate. The original manually operated trip wire was discarded and replaced by an automatic trip mechanism. A sliding drop gate was constructed in the release chute to confine the elk more closely to facilitate tagging.

Following repairs and modifications, the trap was baited inside with hay, protein cake and salt. A feed line of hay and protein cake was established outside the trap. The main gate was left locked open to allow the elk to become accustomed to entering the trap. There were approximately 100 elk in the Danaher Basin at that time.

On January 24, a trip was made from Missoula in a 125 Super Cub to check elk use of the trap and to put out more hay and protein cake if necessary. Tracks in and around the trap indicated that only four or five elk had been in the trap or on the feed line. More hay and cake was put out.

On February 5 the trap was set and operated until February 13. No elk were caught. Operations were then suspended.

When aerial censusing began in that area on March 10, the trap was again baited and set. It was checked every day by a 10 minute flight from Big Prairie where the census crew was headquartered.

On March 16, four cow elk and one bull calf were trapped. The cows were tagged in each ear and released. The calf was tagged in the left ear only. The right ear had been torn in two places, apparently by a coyote. The wound was still bleeding slightly.

No more elk were caught and the trap was locked open on March 21 when the census crew left the area.

The poor results of trapping in this area, as with the others, was due mainly to the mild winter. Natural forage was readily available over most of the range and there was no deep snow to hinder the elk in their foraging.

Prepared by Phillip Marshall

Approved by Robert F. Cooney

Date April 15, 1953

PROGRESS REPORT
INVESTIGATIONS PROJECT

State of Montana

Project No. W-1-R-13

Work Plan No. V

Title of Work Plan: Rocky Mountain Sheep Investigation

The period covered during this quarter was taken up in a combination of office work and necessary field coverage. During the office period, information obtained to date, particularly regarding lambing, lamb survival, mountain sheep distribution and food habits, were summarized in an effort to determine phases of the work which would be most in need of intensive field observation during the remainder of the fiscal year. Definite work plans were prepared as a guide to the completion of this project by June 30, 1953.

Field work consisted of observations pertaining to feeding habits of the mountain sheep on Wildhorse Island and also the possible competition between this class of big game and the rather substantial numbers of mule deer occupying the same range. Possible competition was also indicated by saddle stock that were being wintered on the island.

It is planned that a complete final report will be prepared and submitted shortly after the close of the field program on June 30.

The coming quarter will be highlighted by a recheck of the lambing activities of this mountain sheep group, plus lamb survival data up to the end of the project.

Herman Ogren

Approved by Robert F. Cooney

April 15, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-1-R-13

Work Plan No. VI

Job No. VI-D

Title of Job: Study of Mountain Goat Winter Range Distribution

OBJECTIVES: Locate various bands of mountain goats and determine areas of wintering and the relationship of these areas to summer range.

PROCEDURE: During winter big game survey work, attempts were made to locate by air the wintering areas of goats.

FINDINGS: Goats were found to be wintering at all elevations from cliffs along the South Fork of the Flathead River at approximately 5000 feet to over 8500 feet along the Continental Divide between the South Fork and the Sun River. One band of eleven goats was found on the very top of one of the highest peaks in the entire area.

In the Swan Valley, goats were found as low as 4500 feet.

CONCLUSIONS: Apparently, goats will winter in any area of suitable habitat, regardless of its elevation. They have been observed wintering at low elevations in areas where directly above them was a number of high, wind-bared ridges apparently not being used by them.

Prepared by Phillip Marshall

Approved by Robert F. Cooney

Date April 15, 1953

STATE Montana
PROJECT 1-R (Statistics)
DATE April 15, 1953

STATE-WIDE

CUMULATIVE RECORD OF BIG GAME DATA

The accompanying map and tabulation show the location of the thirty-six big game units and subunits, along with estimated population and losses. Estimates were made by wardens and fieldmen using best information available.

An exceptionally mild winter made estimates of loss difficult and many reports are incomplete. Hunter kill is shown from returns of card questionnaires.

Submitted by:

Approved by:

Name Faye M. Couey

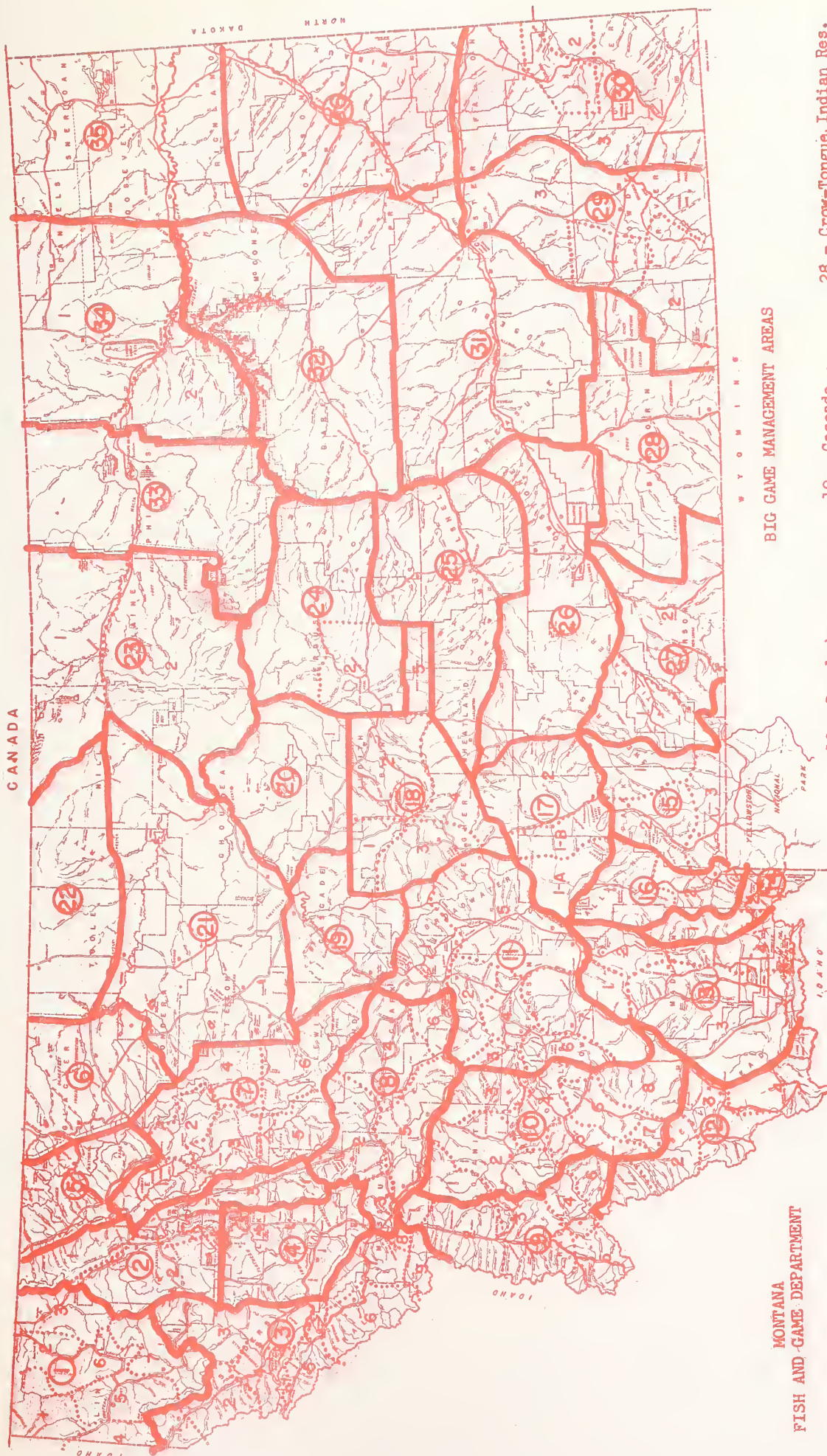
Montana State Department of Fish & Game

Title Big Game and Lands Biologist

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953



W Y O M I N G BIG GAME MANAGEMENT AREAS

- | | | | |
|---------------------------|---------------------------|-----------------------|------------------------------|
| 1 - Kootenai | 10 - Deerlodge | 19 - Cascade | 28 - Crow-Tongue Indian Res. |
| 2 - Kalispell | 11 - Big Belt - Boulder | 20 - Choteau | 29 - Powder River |
| 3 - Clark Fork | 12 - Big Hole - Monida | 21 - Teton | 30 - Carter |
| 4 - Polson | 13 - Madison - Ruby | 22 - Sweetgrass Hills | 31 - Custer |
| 5 - Glacier Park | 14 - Ennis - Hebgen. | 23 - Blaine | 32 - Missouri Breaks |
| 6 - Blackfoot Indian Res. | 15 - Absaroka | 24 - Fergus | 33 - Phillips |
| 7 - Flathead Sun River | 16 - Gallatin | 25 - Musselshell | 34 - Glasgow |
| 8 - Blackfoot | 17 - Bridger - Crazy Mts. | 26 - Yellowstone | 35 - Poplar |
| 9 - Bitterroot | 18 - Little Belts | 27 - Beartooth | 36 - Glendive |

LEGEND

Unit Boundary

Sub-Unit Boundary

C U M U L A T I V E R E C O R D O F B I G G A M E D A T A

ANTELOPE

ESTIMATED POPULATION

LOSSES -- 1952-53

State-wide data on legal kill and
other losses incomplete.

Management Unit	Est. Pop.	Legal Kill	Predators	Other	Total
Absaroka	150				
Beartooth	350				
Big Belt - Boulder	1,165				
Big Hole - Monida	378				
Bitterroot					
Blackfoot					
Blaine	900	250	15	35	300
Bridger - Crazy Mtns.	540				
Carter	2,850	1,005	56	71	1,232
Cascade	1,300		50	100	150
Chouteau	2,500	200	25	20	245
Clark Fork	50				
Custer	6,500	1,650		175	1,825
Deer Lodge	407				
Ennis - Hebgen	90				
Fergus	2,600	500	75	200	775
Flathead - Sun River					
Gallatin					
Glasgow	2,000	375	35	170	580
Glendive	1,550	525	5	42	572
Kalispell					
Kootenai					
Little Belts	917	350	12	18	380
Madison - Ruby	1,681				
Missouri Breaks	8,000	1,300		50	1,350
Musselshell	7,800	3,775		900	4,675
Phillips	1,500	270	25	40	335
Polson	92				
Poplar	300	75		8	83
Powder River	5,950	625		75	700
Sweet Grass Hills	900	180	15	25	220
Teton	800				
Yellowstone	7,500	4,600		800	5,400
Blackfoot Ind. Res.	30	12			12
Crow-Cheyenne Ind. Res.	500				
Moiese Bison Range	22				
Yellowstone Nat'l Park	300				
Glacier Park					
Total	59,622	15,692	313	2,729	18,834

Hunter card questionnaire returns show a kill of 18,096 (73% male).

C U M U L A T I V E R E C O R D O F B I G G A M E D A T A

M U L E D E E R

ESTIMATED POPULATION

LOSSES -- 1952-53

State-wide data on legal kill and
other losses incomplete.

Management Unit	Est. Pop.	Legal Kill	Predators	Other	Total
Absaroka	3,700				
Beartooth	6,525				
Big Belt - Boulder	13,150				
Big Hole - Monida	3,575				
Bitterroot	3,250				
Blackfoot	9,150				
Blaine	4,000	650	15	21	686
Bridger - Crazy Mtns.	8,100				
Carter	2,850	585	11	149	745
Cascade	2,750	750	15	20	785
Chouteau	4,200	500	25	50	575
Clark Fork	9,000				
Custer	5,390	1,325		125	1,450
Deer Lodge	12,455				
Ennis - Hebgen	1,375				
Fergus	7,005	2,100	300	650	3,050
Flathead - Sun River	3,800				
Gallatin	1,400				
Glasgow	3,650	550	30	135	715
Glendive	1,700	425	4	57	486
Kalispell	800				
Kootenai	7,125				
Little Belts	22,863	4,291	172	720	5,183
Madison - Ruby	8,475				
Missouri Breaks	3,000	500			500
Musselshell	5,000	1,600	50	300	1,950
Phillips	4,200	2,000	35	60	2,095
Polson	800				
Poplar	610	100	5	20	125
Powder River	7,000	1,725		101	1,826
Sweet Grass Hills	800		10	15	25
Teton	3,850	400	10	12	422
Yellowstone	5,300	1,300	20	100	1,420
Blackfoot Ind. Res.	300	50	10		60
Crow-Cheyenne Ind. Reservation	3,000				
Moiese Bison Range	200				
Glacier Park	775				
Yellowstone Nat'l Park	600				
Total	181,723	18,851	702	2,535	22,088

Hunter card questionnaire returns show a kill of 40,950 (77% male).

C U M U L A T I V E R E C O R D O F B I G G A M E D A T A

WHITE-TAILED DEER

ESTIMATED POPULATION

LOSSES -- 1952-53

State-wide data on legal kill and
other losses incomplete.

Management Unit	Est. Pop.	Legal Kill	Predators	Other	Total
Absaroka					
Beartooth	325				
Big Belt - Boulder	300				
Big Hole - Monida					
Bitterroot	440				
Blackfoot	5,290				
Blaine	200	10	2	5	17
Bridger - Crazy Mtns.	35				
Carter	895	69	4	42	115
Cascade	155	15	3	8	26
Chouteau	420				
Clark Fork	6,400				
Custer	325	8			8
Deer Lodge	590				
Ennis - Hebgen					
Fergus	1,900	325	75	290	690
Flathead - Sun River	1,100				
Gallatin					
Glasgow	1,660	297	29	45	371
Glendive	4,650	880	1	375	1,256
Kalispell	3,500				
Kootenai	10,850				
Little Belts	760	60	21	31	112
Madison - Ruby	30				
Missouri Breaks	400	25		10	35
Musselshell	100	3	1	3	7
Phillips	650	45	10	20	75
Polson	500				
Poplar	3,500	700	10	90	800
Powder River	835	40		10	50
Sweet Grass Hills					
Teton	95	8	2	5	15
Yellowstone	15				
Blackfoot Ind. Res.	50	10		5	15
Crow-Cheyenne Ind. Res.	200				
Moiese Bison Range	110				
Glacier Park	475				
Yellowstone Park					
Total	46,655	2,495	158	939	3,592

Hunter card questionnaire returns show a kill of 12,846 (64% male).

C U M U L A T I V E R E C O R D O F B I G G A M E D A T A

ELK

ESTIMATED POPULATION

LOSSES -- 1952-53

State-wide data on legal kill and
other losses incomplete.

Management Unit	Est. Pop.	Legal Kill	Predators	Other	Total
Absaroka	900				
Beartooth	251				
Big Belt - Boulder	2,185				
Big Hole - Monida	895				
Bitterroot	1,300				
Blackfoot	1,845				
Blaine	86		5	7	12
Bridger - Crazy Mtns.	150				
Carter	20				
Cascade	167		4	3	7
Chouteau	350	215	4	6	225
Clark Fork	2,755				
Custer	20				
Deer Lodge	2,884				
Ennis - Hebgen	375				
Fergus	100	4	2	5	11
Flathead - Sun River	5,050				
Gallatin	1,540				
Glasgow	120				
Glendive					
Kalispell	565				
Kootenai	810				
Little Belts	986	928	4	10	942
Madison - Ruby	1,946				
Missouri Breaks					
Musselshell					
Phillips	80			50	50
Polson	50				
Poplar	4				
Powder River					
Sweet Grass Hills	36			3	3
Teton	159	8		3	11
Yellowstone	40			5	5
Blackfoot Ind. Res.		100			100
Crow-Cheyenne Ind. Res.	4,000				
Moiese Bison Range	75				
Glacier Nat'l. Park	3,140				
Yellowstone Nat'l. Park	9,200				
Total	42,104	1,687	19	92	1,798

Hunter card questionnaire returns show a kill of 6,422 (55% male).

C U M U L A T I V E R E C O R D O F B I G G A M E D A T A

MOOSE

ESTIMATED POPULATION

LOSSES -- 1952-53

State-wide data on legal kill and
other losses incomplete.

Management Unit	Est. Pop.	Legal Kill	Predators	Others	Total
Absaroka	250				
Beartooth	56				
Big Belt - Boulder	129				
Big Hole - Monida	294				
Bitterroot	282				
Blackfoot	5				
Blaine					
Bridger - Crazy Mtns.	22				
Carter					
Cascade					
Chouteau					
Clark Fork	113				
Deer Lodge	646				
Ennis - Hebgen	130				
Fergus					
Flathead - Sun River	132				
Gallatin	130				
Glasgow					
Glendive					
Kalispell	95				
Kootenai	300				
Little Belts	22				
Madison - Ruby	220				
Missouri Breaks					
Musselshell					
Phillips					
Polson					
Poplar					
Powder River					
Sweet Grass Hills					
Teton					
Yellowstone					
Blackfoot Ind. Res.	15	5			5
Crow-Cheyenne Ind. Res.					
Moiese Bison Range					
Glacier Nat'l Park	115				
Yellowstone Nat'l Park	600				
Total	3,556	5			5

Hunter card questionnaire returns show a kill of 211 (55% male).

C U M U L A T I V E R E C O R D O F B I G G A M E D A T A

MOUNTAIN SHEEP

ESTIMATED POPULATION

LOSSES --- 1952-53

State-wide data on legal kill and other losses incomplete.

Management Unit	Est. Pop.	Legal Kill	Predators	Other	Total
Absaroka	55				
Beartooth	125				
Big Belt - Boulder					
Big Hole - Monida					
Bitterroot	20				
Blackfoot	49				
Blaine					
Bridger -- Crazy Mtns.					
Carter					
Cascade					
Chouteau					
Clark Fork					
Custer					
Deer Lodge	44				
Ennis - Hebgen	46				
Fergus					
Flathead - Sun River	380				
Gallatin	80				
Glasgow					
Glendive					
Kalispell					
Kootenai	390				
Little Belts					
Madison - Ruby	20				
Missouri Breaks	80			3	3
Musselshell					
Phillips					
Polson	40				
Poplar					
Powder River					
Sweet Grass Hills					
Teton					
Yellowstone					
Blackfoot Ind. Res.					
Crow-Cheyenne Ind. Res.					
Moiese Bison Range	24				
Glacier Park	260				
Yellowstone Park	140				
Total	1,753			3	3

C U M U L A T I V E R E C O R D O F B I G G A M E D A T A

MOUNTAIN GOATS

ESTIMATED POPULATION

LOSSES -- 1952-53

State-wide data on legal kill and
other losses incomplete.

Management Unit	Est. Pop.	Legal Kill	Predators	Other	Total
Absaroka					
Beartooth	22				
Big Belt - Boulder	37				
Big Hole - Monida					
Bitterroot	525				
Blackfoot	137				
Blaine					
Bridger - Crazy Mtns.	225				
Carter					
Cascade					
Chouteau	15		2	3	5
Clark Fork	105				
Custer					
Deer Lodge	635				
Ennis - Hebgen	18				
Fergus					
Flathead - Sun River	1,080				
Gallatin	20				
Glasgow					
Glendive					
Kalispell	150				
Kootenai	240				
Little Belts	38				
Madison - Ruby					
Missouri Breaks					
Musselshell					
Phillips					
Polson	70				
Poplar					
Powder River					
Sweet Grass Hills					
Teton					
Yellowstone					
Blackfoot Ind. Res.					
Crow-Cheyenne Ind. Res.					
Moiese Bison Range					
Glacier Nat'l Park	890				
Yellowstone Nat'l Park					
Total	4,189		2	3	5

Hunter card questionnaire returns show a kill of 50.

C U M U L A T I V E R E C O R D O F B I G G A M E D A T A

BLACK BEAR

ESTIMATED POPULATION

LOSSES -- 1952-53

State-wide data on legal kill and
other losses incomplete.

Management Unit	Est. Pop.	Legal Kill	Predators	Other	Total
Absaroka	170				
Beartooth	175				
Big Belt - Boulder	240				
Big Hole - Monida	75				
Bitterroot	235				
Blackfoot	530				
Blaine					
Bridger - Crazy Mtns.	115				
Carter					
Cascade	23	8			8
Chouteau					
Clark Fork	890				
Custer					
Deer Lodge	340				
Ennis - Hebgen	165				
Fergus	5				
Flathead - Sun River	590				
Gallatin	85				
Glasgow					
Glendive					
Kalispell	620				
Kootenai	1,360				
Little Belts	243	21		6	27
Madison - Ruby	235				
Missouri Breaks					
Musselshell					
Phillips					
Polson	50				
Poplar					
Powder River					
Sweet Grass Hills					
Teton	7	3			3
Yellowstone					
Blackfoot Ind. Res.	100	15			15
Crow-Cheyenne Ind. Res.	125				
Moiese Bison Range					
Glacier Nat'l Park	415				
Yellowstone Nat'l Park	360				
Total	7,153	47		6	53

Hunter card questionnaire returns show a kill of 728 (75% male).

CUMULATIVE RECORD OF BIG GAME DATA

GRIZZLY

ESTIMATED POPULATION

LOSSES -- 1952-53

State-wide data on legal kill and other losses incomplete.

Management Unit	Est. Pop.	Legal Kill	Predators	Other	Total
Absaroka	10				
Beartooth	5				
Big Belt-- Boulder					
Big Hole - Monida					
Bitterroot	3				
Blackfoot	45				
Blaine					
Bridger - Crazy Mtns.					
Carter					
Cascade					
Chouteau					
Clark Fork	40				
Custer					
Deer Lodge	1				
Ennis - Hebgen	15				
Fergus					
Flathead - Sun River	154				
Gallatin					
Glasgow					
Glendive					
Kali spell	70				
Kootenai	81				
Little Belts					
Madison - Ruby					
Missouri Breaks					
Musselshell					
Phillips					
Polson	10				
Poplar					
Powder River					
Sweet Grass Hills					
Teton					
Yellowstone					
Blackfoot Ind. Res.	3				
Crow-Cheyenne Ind. Res.					
Moiese Bison Range					
Glacier Nat'l Park	120				
Yellowstone Nat'l Park	180				
Total	737				

Hunter Card Questionnaire returns show a kill of 10.

STATE Montana
PROJECT NO. W-35-R-4
DATE April 15, 1953
VOL. IV NO. 1

QUARTERLY PROGRESS REPORT FOR
INVESTIGATIONS PROJECTS

As Required By

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Southwestern Montana Unit.
2. Leader: J. E. Gaab, Unit Biologist

Philip South, Junior Biologist
Norman Wortman, Fieldman

3. Report of Progress:

Work Plan I: Big Game Population and Range Trends

Job I-A: Big Game Survey of the Beartooth Plateau
(including Boulder River Drainage)

1. An aerial elk census was made on February 17th, from Line Creek to Redlodge Creek. The following elk were observed.

42	Line Creek
50	Main Fork Rock Creek
44	West Fork Rock Creek
27	Redlodge Creek
163	Total

- (a) This was considered a very good coverage. However, a group of 8 animals seen previously were not located.
 - (b) The Line Creek wintering population fluctuates back and forth across the Montana-Wyoming line.
 - (c) The local sportsmen, ranchers, Forest Service and Deputy Game Warden would like an agreement amongst all concerned to have a countable wintering herd of 200 elk for this area. Negotiations for such an agreement are in process.
2. A brief examination of mule deer range was made in the Stillwater River Area. Due to the

open winter and the wide distribution of deer, little information was gained. In the Box Canyon-Silver Creek big game closure deer are concentrated as usual.

Job I-B: Big Game Survey in Absaroka Wilderness Area
Inactive during report period.

Job I-C: Big Game Survey in Upper Yellowstone
1. Due to the mild winter, very few elk migrated out of Yellowstone National Park.
2. The distribution pattern of deer is very desirable.

Job I-D: Big Game Survey in Gallatin
1. Constant observations of all big game species have been observed very closely during the quarter.
2. An aerial elk census was conducted when elk appeared to be stabilized on winter range to compare with the December 16 aerial census and complete the migration pattern.
(a) A total of 1293 elk was observed as compared to 1316 previously.
(b) The distribution pattern was quite desirable. The two concentrations as usual were on Taylor Fork, including the Wapiti Creek slopes, and Porcupine Creek. Two hundred to two hundred and fifty elk have used the Gallatin Game Range consistently during the quarter.
3. Mule deer appear to be nearly as numerous as last year despite the rather heavy winter loss last year.

Job I-E: Big Game Survey in Madison
1. Several attempts to get an aerial elk census were made but none were satisfactory. The east side of the Madison is wintering about the usual number of elk. The west side elk will be taken up under Work Plan III.
2. Numerous investigations into the deer range indicate a better balanced deer herd than in the past.
3. Twenty elk were transplanted from Yellowstone Park to the Missouri Flats area.
4. The Meadow Creek-Willow Creek area was investigated for a one hundred head elk plant on the put and take management plan.
5. The transplanted antelope on either side of the river have been observed as making rapid increases. The east side antelope frequent one rather small area and are drawing ranchers' complaints. It may be necessary to recommend a small harvest to distribute these animals.

6. One hundred and sixty antelope were censused by air in the Harrison area.

Job I-F: Big Game Survey in Ruby

1. An aerial elk census on the upper Ruby River on February 12 was made and 115 elk were observed:
92 - Warm Spring Creek
12 - Cottonwood Creek
7 - Divide Creek (See Work Plan III)
2. Upper Ruby River deer census (See Job Completion Report).

Job I-G: Big Game Survey in Blacktail

1. An aerial elk census, including the entire Snowcrest Mountains and Blacktail Ridge, was conducted and 1376 elk were found wintering in that area.

Job I-H: Big Game Survey in Beaverhead River Area

1. Beaverhead River antelope census.
Job Completion Report attached.
2. Antelope trapping and tagging in Sage Creek.
Job Completion Report attached.
3. Aerial elk census in Lima Hills.
444 were found wintering from Little Sheep Creek to Beaver Creek.
4. Aerial elk census in Highland Mountains.
Total Highlands elk 108 head, wintering in the following areas:
22 - Brazil Ridge
27 - Hells Canyon
20 - Fish Creek
9 - Camp Creek
30 - Moose Creek
5. The Canyon Creek elk were counted by a delegation of sportsmen-ranchers-Forest Officers and Fish and Game Department officers. 224 elk were counted.
6. 47 elk were counted on McCartney Mountain.

Job I-I: Big Game Survey in Big Hole-Wise River

1. One hundred and eighty-six elk were found wintering in the Upper Big Hole above Wise River.
2. Five hundred elk were found wintering from Jerry Creek to Charcoal Basin to High Rye Willow Creek to the Mill Creek road.
3. Due to the complexity of the year round distribution pattern of the Big Hole elk, more intensive observations are necessary.

Job I-J: Big Game Survey, Crazy Mountains Area

1. An aerial inspection of deer concentrations indicated a different distribution pattern than last year. Deer appeared to be reduced or

dispersed. The groups observed weren't as large as last year. The large concentration of deer in Swamp Creek particularly wasn't evident. The lower Otter Creek area, where ranchers are selective in permitting hunters on private ground, indicated an increase in deer.

2. A general inspection was made up Sweetgrass Canyon on snowshoes. The deer appeared to be wintering higher than usual due to less snow than is normal.

Job I-K: Big Game Survey, Big Belt - Boulder Area

1. By aerial census in November, 204 elk were observed in the Crow Creek-Elkhorn area. A March aerial coverage was made and 141 elk were observed. This indicates that the winter area for these elk must extend over more territory than is usually considered.
 2. By aerial census in March, 226 elk were observed in the Six Mile-Deep Creek area. This included elk on the Meagher County side of the divide.
 3. A mule deer inspection was made in the Limestone Hills. Deer are not confined to their usual range in this area. Heavy browse use in past years plus accessibility of a larger wintering area are probably factors which cause deer to winter much higher than usual. The effect of last year's three-day hunter's choice season could not be determined. However, damage to haystacks in the Radersburg area is minimized.
 4. Mule deer inspection in the Whites Gulch-Confederate Creek area indicated excessive use to key browse species and no appreciable decrease in damage on haystacks.
 5. The Deep Creek-Cottonwood Creek deer range was investigated. The main Deep Creek area is quite open and deer concentrations cannot be seen on the lower slopes as usual. The usual road kill loss is not apparent. In the North Fork of Deep Creek and Lippert Gulch deer concentrations are not lessened. Haystack damage continues to be a problem and the deer are moving into lower areas causing more interference with private agricultural land.
 6. Aerial antelope census Radersburg, Townsend, Canyon Ferry area.
- Job Completion Report attached.

Work Plan II: Big Game Reproduction, Age Classification and Hunter Utilization

Job II-A: Age Classification and Herd Ratio of Increase

1. Only one known-age elk jaw was collected for the elk aging study this quarter. This was taken from a bull elk which had been trapped and tagged 15 years ago as a calf, transplanted in the Dillon area and killed in the Lima Peaks.
2. During the Upper Ruby deer count, 650 were classified as fawns and adults. Results: 31.5% fawns, 68.5% adults.

Job II-B: Hunter Utilization

Inactive during report period.

Work Plan III: Study of the Migratory Habits of Big Game in Key Areas

Job III-A: Visual Tagging of Calf Elk on the Gallatin-Yellowstone Range

Inactive during report period.

Job III-B: Tagging and Release of Mature Elk on the Gallatin Winter Range

Project not yet started.

Job III-C: Observation of Elk Migration on Gallatin-Madison Divide

1. This migration has been watched closely since elk drifted into the Taylor Fork area. This migration has been controlled this winter due to the presence of about 300 elk that are wintering on the Madison side that drifted into that area just following the open season. Without the acquisition of winter range on the Madison slope this migration must be controlled.

Job III-D: Observation of Elk Migration in the Ruby-Blacktail Area

1. This migration took place last quarter. However, the elk wintering in the Blacktail area drifted into flat country and caused some damage to hay-stacks.

Job III-E: Observation of Elk Migration in the Big Hole-Wise River Area

1. The complexity of this migration will necessitate intensive investigations for an entire season. Until a fieldman can be assigned to the job, information will be sporadic and non-conclusive.

Job III-F: Manipulating Big Game Populations

1. A continuous elk season in a problem area on the Madison was recommended and carried out to much success. About 30 elk were harvested out of a herd of about 250 by applying hunting pressure in the path of migration to the problem area. The consequence was that about 100 elk wintered just across the divide in the Ruby River drainage, some stopped and wintered before reaching the problem area and others drifted into higher country below the problem area by going around it.
2. The manipulation of seasons to control hunting pressure on small elk herds to maintain a substantial harvest year after year is somewhat of a challenge. This fall's hunting seasons recommendations are in the process of being made.
 - (a) All elk seasons in accessible areas are to begin on a uniform date throughout the state on November 1.
 - (b) All such seasons will begin with a branch-antlered bull season for the same period.
 - (c) The either sex elk season following the branch-antlered season will be of the same length and not to exceed the length of the either sex deer season only in areas where it is necessary to obtain the harvest desired.
 - (d) These elk seasons, to conform with the general hunters choice deer seasons, will reduce elk hunter concentrations.
3. A few extended or special hunter's choice deer seasons will be necessary to get the desired harvest.
4. A proposal to aid the Northern Yellowstone elk herd. The early September 15 elk season in the Absaroka Primitive Area is recommended to continue. The regular October 15 to November 15 elk season in Park County to continue in areas as previously described. On November 15 all areas in Park County would close to the hunting of elk. At such time when a desired number of elk had migrated out of Yellowstone Park to winter in the Trail Creek to Six Mile Creek area, the trespass area from Trail Creek to the present Game Preserve boundary would then open to hunting to harvest any additional migrators. It is the hope that this proposal would have several benefits.
 - (a) It would establish a migrating herd. In the past it has been attempted to harvest all migrations up until January 31. This, of course, is like killing the goose that laid

the golden egg. A migration has been desirous but any elk who attempted to migrate were faced with running the gauntlet. The force of weather conditions has been the only impetus for these elk to extend their range outside Yellowstone Nat'l Park. A few years of migrating without interference would no doubt establish an earlier migration.

- (b) It would extend the winter range and alleviate over-used range within Yellowstone Nat'l Park. A large area has been set aside for game range on the Nat'l Forest that has received use only during severe winters. An early unmolested migration would take advantage of this range each year.
- (c) It would increase the number of elk summering in the Absaroka Primitive Area, consequently increase hunter success in that area. The first migration of elk out of the Park on the east side of the river are elk that summer in the primitive area. These elk are always subjected to a heavy harvest. This proposal would protect those elk and increase sporting back country hunting in the primitive area.

Work Plan IV: Range Inspection and Browse Measurements as well as
Transect and Exclosure Observations

Job IV-A: Forage Utilization on Key Areas

1. General observations of forage utilization has been made on most key elk and deer ranges. No weights or measurements of existing transects and exclosures will be made until next quarter. Sites are being picked for a mule deer intensive food habit study in Beaverhead County.

Job IV-B: Range Condition Survey

1. In cooperation with deputy game wardens and Nat'l Forest officers a complete big game estimate has been made for the entire area covered by this project.
2. Criteria for classifying big game ranges are still in process.

Work Plan V: Experimental Range Improvement
Inactive during report period.

Work Plan VI: Moose Investigations

Job VI-A: Moose Census and Distribution

1. Aerial moose census and range trends in Red Rock Lakes area.
Job Completion Report attached.

2. Aerial Moose Census in the Big Hole.
Job Completion Report attached.

Job VI-B: Herd Classification and Sex Ratio Determination
Inactive during report period.

Job VI-C: Condition of Forage on Important Moose Ranges
Included in Job Completion Reports.

Job VI-D: Relationship of Moose to Other Big Game Species
and/or Domestic Livestock on Critical Ranges
Inactive during report period.

Job VI-E: Effect of Hunting and Recommendations for Future
Management
Recommendations for 1953 Moose Harvest.

1. Area No. 1 - Big Hole - 25 mature moose, October 15 - December 31.
(a) Reduce the area to private and public land outside the National Forest.
2. Area No. 2 - Red Rock Lakes - 20 mature moose, October 15 - November 15.
3. Area No. 3 - Stillwater - 5 mature bull moose, October 15 - November 15.
4. Area No. 4 - Lower Madison-Spanish Creek - 10 mature bull moose, October 15 - November 15.
5. Area No. 5 - Hebgen Lake - 5 mature moose, October 15 - November 15.
6. Area No. 6 - W. Fork of Madison - 5 mature moose, October 15 - November 15.
7. Area No. 7 - Ruby River - 10 mature moose, October 15 - November 15.
8. Area No. 8 - Hellroaring - 3 mature bull moose, September 15 - November 15.
9. Area No. 9 - Buffalo Fork - 3 mature bull moose, September 15 - November 15.
10. Area No. 10 - Slough Creek - 3 mature bull moose, September 15 - November 15.
11. Area No. 11 - Cooke City - 3 mature bull moose, September 15 - November 15.
12. Area No. 12 - Beartooth Plateau - 3 mature bull moose, September 15 - November 15.
13. Area No. 13 - Grasshopper-Rattlesnake - 7 mature moose, October 15 - November 15.
14. Area No. 14 - W. Gallatin River - 5 mature bull moose, October 15 - November 15.
15. Area No. 15 - Tom Miner - Cinnabar - 3 mature bull moose, October 15 - November 15.

Work Plan VII: Rocky Mountain Goat Investigation

Job VII-A: Investigation of Planted Mountain Goat Herds

1. Crazy Mountains

Two investigations of wintering habits have been made as part of the intensive studies of these goats. A winter aerial comparative census was partially conducted by the time this report was written.

2. Rock Creek (Beartooth) - inactive during report period.

3. Stillwater Canyon - inactive during report period.

4. Spanish Peaks (Gallatin) - inactive during report period.

Job VII-B: Investigation of Native Mountain Goat Herds
Inactive during report period.

Work Plan VIII: Rocky Mountain Sheep Investigations

Job VIII-A: Beartooth Range (Rosebud - Stillwater)

1. From all observations and information collected by the Deputy Game Warden in the Stillwater area there are about 70 sheep in this band. It is recommended that the Box Canyon closed area be opened to the hunting of deer to minimize competition between sheep and deer. It is further recommended to trap about 14 females from this band and 3 males from the Missouri Breaks-Terry-all band and transplant them in the Sixteen Mile Creek area (Gallatin County).

Job VIII-B: Upper Yellowstone

1. Five mature rams have been seen wintering in the Bear Creek area.

Job VIII-C: Gallatin - Madison

1. Several investigations have been made in this area. A complete distribution report is pending more investigation.

Job VIII-D: Hebgen Lake

Inactive during report period.

Job VIII-E: Gravelly Range

Inactive during report period.

Submitted by:

Name: J. E. Gaab

Title: Biologist

Approved by:

Montana State Department of Fish and Game

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-35-R-4

Work Plan I

Job No. I-F

Title of Job : Big Game Survey in Ruby

Subtitle: Upper Ruby Deer Census

Objectives: Obtain a trend census.

Personnel: Seven sportsmen from Butte Anglers Club
Two Nat'l Forest officers
Four Montana Fish & Game Dept. officers

Procedure: Established counting units and approximate routes of travel were used.

Findings: Table 1 Mule Deer Census

Unit No.	1953	1951	1949	1948	1947
1.	124	55	47	100	61
2.	358	426	350	384	467
3.	825	528	1550	1206	788
4.	58	174	32	118	43
5.	<u>353</u>	<u>287</u>	<u>280</u>	<u>296</u>	<u>365</u>
Total	1718	1470	2259	1704	1724

Table 2

Total Harvest

1948	653 deer
1949	582 "
1950	566 "
1951	590 "
1952	424 "

1. Browse use throughout all units was found to be excessive.
2. The area is comparatively open this year and no winter loss was seen.

Conclusions:

1. A month either sex harvest beginning October 15 through November 15 isn't an adequate harvest. The state-wide opening on November 1 to hunter's choice deer should be extended past November 15 until the desired harvest is obtained. One thousand deer should be harvested to reduce excessive browse use.

Prepared by: J. E. Gaab

Approved by: R. F. Cooney

Date: April 2, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-35-R-4 Work Plan I Job No. I-H

Title of Job: Big Game Survey in Beaverhead River Area

Subtitle: Sage Creek Antelope Tagging

Objective: To tag and release as many antelope as possible out of a wintering concentration to gain better information of their fall distribution.

Personnel: Four Department personnel aided by local sportsmen.

Procedure: The antelope trap was set up in the vicinity of an antelope wintering concentration of about 700 animals. One band was driven and held in the upper one-half of the large pen by means of a draw curtain across the middle of the pen. A second band was then driven into the second one-half of the pen. The first animals were quieted down enough then to tag. When the first group was tagged, the second group was quieted down enough to go right on tagging, until all that were caught were tagged. This was one day's work, and was repeated the second day. The large stock tag was used with the $1\frac{1}{4}$ " by $1\frac{1}{2}$ " rectangle on the rear of the ear. All animals were tagged on the left ear. Three men put up the trap in a day and a half. The trap was taken down in two hours by ten men the second day after the tagging was completed.

Findings:

1. 217 antelope were trapped, tagged and released.
 - a. 68 mature bucks 117 mature does 32 fawns
2. It was discovered that the pilot without an observer had better maneuverability of his plane and kept track of the antelope just as well.
3. Five percent loss was attributed to the use of the curtain. The solid canvas curtain appeared as a barrier to the antelope and they hit the land wings rather than going on into the trap.

Submitted by J. E. Gaab

Approved by R. F. Cooney

Date April 2, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-35-R-4 Work Plan No. I Job No. I-H

Title of Job: Big Game Survey in Beaverhead River Area

Subtitle: Aerial Antelope Census

Objective: To obtain a complete census of antelope in the Beaverhead area.

Personnel: Dave McCauley - Pilot
Phil South - Jr. Biologist

Procedure: A 105-Super Cub was used to cover all of the areas known to support antelope. The areas were flown in strips approximately $\frac{1}{2}$ mile in width. As the antelope were counted, they were headed back into strips already covered.

The flying was done on February 9, 10, 12 and 13. A fresh snow had fallen just previous to February 9 and more snow fell on the 11. During the time the counting was being carried out the weather was clear and cool.

Findings:	<u>Area</u>	<u>No. Antelope</u>
	McHessor Creek	4
	Stene Creek	41
	Sweet Water	233
	Medicine Lodge	115
	Horse Prairie	78
	Argenta	56
	Birch Creek	112
	Beaverhead Rock	99
	Blacktail	125
	Sage Creek	717
	Lima	<u>121</u>
	Total	1701

No antelope were found in the Centennial, Sheep Creek Basin, or Grasshopper Creek areas. All three of these areas are known to support substantial numbers of antelope during the summer months.

Sixteen and one-half hours were spent in the air.

Conclusions: The snow in the Centennial and Sheep Creek Basin was too deep to allow antelope to winter successfully. However, though the snow fall was light in the Grasshopper area, the antelope here also apparently migrated to another area for the winter.

Recommendations:

It is recommended that another aerial census of antelope in this area be carried out during the same period of next year. This would aid in determining the population trend of antelope in the Beaverhead.

Prepared by: Philip South

Approved by: R. F. Cooney

Date: April 3, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-35-R-4

Work Plan No. I

Job No. I-K

Title of Job: Big Game Survey Big Belt - Boulder Area

Subtitle: Aerial Antelope Census Radersburg, Townsend, Canyon
Ferry Area

Objective: To obtain a complete census.

Personnel: James Stradley - Pilot
J. E. Gaab - Biologist

Procedure: A 125 Super-Cub was used to fly mile and one-half mile strips about 350 feet above the ground using section lines to grid the entire antelope area. One-half mile strips were flown in the rougher terrain and mile strips on the flat terrain.

Findings:

1. Radersburg area northeast of Crow Creek	97
2. Townsend-Winston area	394
3. Missouri Valley - Canyon Ferry area	83
4. 41 white-tailed deer were seen along the Missouri River to Beaver Creek. These are a transplanted herd.	

Conclusions:

1. The three antelope herds must be treated separately for management purposes. One herd of antelope southeast of Highway 10 had not been censused by the time this report was written. However, they must be included for management purposes with the Radersburg-Crow Creek antelope. Increased land cultivation due to a new irrigation project in this area is reducing the antelope range and causing interference between antelope and farming.
2. The esthetic value of antelope along Highway 10 from Townsend to Winston makes hunting a last resort in management. In the past this antelope herd has been kept to range carrying capacity and compatible with other land users in the area by live trapping and transplanting the surplus in new areas. This practice is recommended to continue as long as transplanting sites are available.

3. The Missouri Valley -- Canyon Ferry herd should be maintained at about 100 head to lessen competition with ranching in the area. A sustained harvest to take the annual increment is recommended.

Submitted by: J. E. Gaab

Approved by: Robert F. Cooney

Date: April 2, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-35-R-4 Work Plan No. VI Job No. VI-A

Title of Job: Moose Census and Distribution

Subtitle: Aerial Moose Census and Range Trends in Red Rock Lakes Area

Objectives: To determine moose population and range trend in Red Rock Lakes Refuge area.

Personnel: Aerial Census:
Dave McCauley - Pilot
Phil South - Jr. Biologist

Range Trend Check:
Winston E. Banko - Refuge Manager
Orville Lewis - Deputy Game Warden
Philip South - Jr. Biologist

Procedure: An aerial census was conducted in the area using a 105-Super Cub.

A ground check of the browse on the range was conducted using a snow plane for transportation.

Findings: An aerial count showed 37 moose in the Refuge area.

The ground check showed much dead and dying willow in the browse areas. Browsing had been very heavy in areas frequented by the moose. In some areas extensive barking of larger aspens had been in progress. This barking was begun last winter and carried on more extensively this winter.

Conclusions: Though the moose do not seem to be causing the death of the willows, their dying reduces the moose habitat. The heavy barking of larger aspens may indicate a marginal habitat.

Recommendations:

It is recommended some moose be again harvested in the Red Rock Lakes Refuge. The number will be set on further investigation.

Prepared by: Philip South

Approved by: Robert F. Cooney

Date: April 3, 1953

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-35-R-4 Work Plan No. VI Job No. VI-A

Title of Job: Moose Census and Distribution

Subtitle: Aerial Moose Census in the Big Hole

Objective: To determine number of moose in the Big Hole.

Personnel: Dave McCaully - Pilot
Philip South - Jr. Biologist

Procedure: A 105 Super Cub was used to fly all the willow browse areas in the Big Hole as far down the Big Hole river as Squaw Creek. The larger expanses of willow were flown by strips. The census was made on Marsh 29.

Findings: The following is the number of moose counted, listed according to areas found:

<u>Area</u>	<u>No. of Moose</u>
Upper drainage above Jackson	6
Big Hole River between Jackson and Wisdom	6
Big Hole River below Wisdom	21
North Fork of Big Hole River	9
Big Lake Creek area	10
Big Swamp Creek area	9
Warm Springs Creek area	<u>3</u>
Total	64

Recommendations:

1. That this survey be conducted each year.
2. The moose harvest be confined to private lands outside the forest boundary.

Prepared by: Philip South

Approved by: Robert F. Cooney

Date: April 3, 1953

STATE Montana
PROJECT NO. W-36-R-3
DATE April 15, 1953
VOL. IV NO. 1

QUARTERLY PROGRESS REPORT

For

SURVEYS AND INVESTIGATIONS

As Required By

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Lincoln County Deer Study

2. Project Personnel: Robert M. Blair
Owen A. Wilson
Duane P. Couvillion

3. Report of Progress:

A. The 1952 Big Game Season in the Fisher-Wolf Creek Area

Buck hunting in Lincoln County extended from October 15 to November 20, inclusive, a total of 35 days. As originally specified by legislation the season was to end on November 15. However, due to the low kill and prolonged mild weather conditions, in this area, a five-day season extension was granted.

A special antlerless deer season (hunter's choice) in the Fisher River-Wolf Creek area ran concurrently with the regular buck season from November 8 to November 20, inclusive. A total of 13 days.

PURPOSE:

Past surveys and studies within the Fisher River-Wolf Creek area indicate that the winter range is severely overutilized by deer. As a result of this overutilization of the winter range and the desire to achieve the proper age composition of the herd, the Montana Fish and Game Commission authorized an antlerless deer season in this area. No limits were set specifying the maximum number of antlerless deer to be removed during this special season, whereas in the past a limit was placed on the number to be harvested.

This report summarizes the results of the special antlerless season in the Fisher River-Wolf Creek area from November 8 to November 20, inclusive.

PROCEDURE:

Checking Stations:

Location:

Three checking stations were maintained by the Lincoln County project this year, from November 8 to November 20, inclusive. Two covered the Fisher River-Wolf Creek area and the third was situated west of McGregor Lake, on McGregor Creek, covering the north exit of the Thompson River area. The two stations covering the Fisher River-Wolf Creek area, the only two concerned in this report, were so located as to cover the main traveled exits from this area.

Personnel:

Each station was manned by two men, or in one instance a man and wife combination which proved to be very successful. One Wildlife student from the University of Montana came up to assist as a checker on the Island Lake Station for the first eight days of the special season. It can be pointed out that the excellent cooperation received from the hunters was, in a large part, due to the courtesy of the checkers. All checkers were intently interested in procuring the best results from their work and used every precaution in gathering accurate data so far as their capabilities permitted. At each station at least one checker was a well known resident of this area which proved of great value in aiding sportsmen with general questions concerning hunting sites and past hunting conditions. This in itself strengthened the relations between the sportsmen and the Department. The names of the checking station personnel and station locations are listed in Table I.

Table I. Checking stations and personnel maintained by the Lincoln County project during the 1952 special antlerless deer season.

<u>Station</u>	<u>Checkers</u>	<u>Location</u>
Waylett	Charles F. Haschke Grace H. Haschke	T. 27 N., R. 30 W., Sec. 19, at the junction of highway #2 and the Lower Fisher road.
Island Lake	Blaze Echo Russell Hart (part time) Al Watson	T. 29 N., R. 26 W., Sec. 31, at the south end of Island Lake.
McGregor Lake	Bill Boothman Francis Thompson	T. 26 N., R. 26 W., Sec. 8, at the junction of McGregor Creek and the Thompson River road.

Data Obtained:

All information regarding the hunters and their kills was recorded on standard Fish and Game Department checking station cards. Data concerning the kills included species, sex, antler beam diameter, number of points on antlers, weight, length of hind foot, and age (lower jaws collected when possible). In addition, the hunters were asked to save the reproductive organs from females. Few of these were collected, primarily due to the hunter's lack of technical knowledge in properly locating and removing the organs, even though diagrams and instructions for removing reproductive organs were handed to hunters prior to going into the field.

Information concerning the hunter included his name, address, game license number, and caliber of gun used.

Checking Card Analysis:

At the close of the season data obtained from the checking station cards were classified and analyzed to obtain the information presented in this report. As pointed out previously, only the data from the two stations covering the Fisher-Wolf Creek area is included in this report:

Description of the Area:

The area covered by the data in this report includes all of the lower Fisher River and its tributaries north of U. S. Highway #2, an area of approximately 232,000 acres. With the exception of a few scattered homesteads, title to the land is held by the Anaconda Copper Mining Company, the J. Neils Lumber Company, Northern Pacific Railroad, State of Montana, and the Kootenai National Forest.

Vegetative cover on the area varies with the site. Ponderosa pine dominates south and west facing slopes with Douglas fir and larch being dominant species on the north and east facing slopes. In general, the lower flats and benches are covered with "doghair" stands of lodgepole pine, interspersed with thickets of Douglas fir; the overstory generally being ponderosa pine and larch.

Browse conditions are good to excellent on the summer range and poor to critical on the winter range.

Weather Conditions:

During the entire special antlerless deer season the weather was very unfavorable for hunting. As shown in Figure I, diurnal temperatures were consistently above 40°F (recorded at the Libby Ranger Station), with precipitation being recorded on only three days; November 12 with .02 inch, 13 with .12 inch, and 14 with .10 inch. This combination of temperature and precipitation not only resulted in very dry conditions in the woods but also failed to force the deer to the winter range.

Results of the Hunting Season:

One thousand one hundred and thirty-three hunters killed 260 deer and

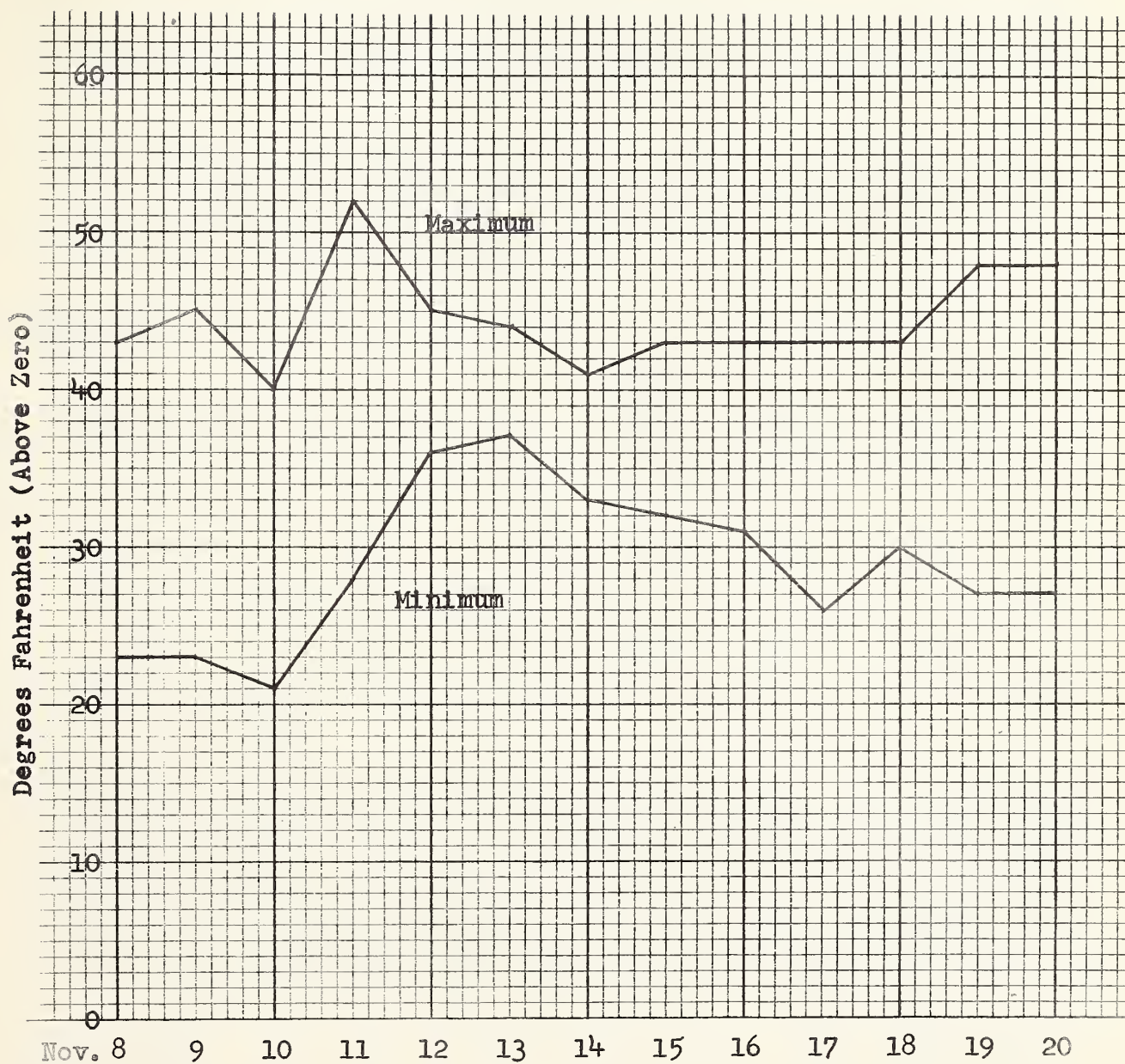


Figure I.

DAILY TEMPERATURES DURING 1952 ANTLERLESS DEER SEASON
FISHER RIVER-WOLF CREEK AREA

6 bull elk, which gives a hunters success of 23.48 per cent.

The Island Lake station checked out the largest number of deer killed. As can be seen in Table II, 170 or 65.38 per cent of the deer checked came through the Island Lake station while 90 or 34.62 per cent came through Waylett's. Island Lake also checked the largest number of hunters.

Hunters success was higher this year in comparison with past recorded success in this area. Island Lake reported a hunters success (deer only) of 29.16 per cent while the average success, on deer, for the Fisher River-Wolf Creek area was 23.07 per cent.

Table II. Deer killed in the Fisher-Wolf Creek area - 1952 antlerless deer season.*

Station	White-tailed	Mule Deer	Total	% of Total Kill	No. Hunters	% of Hunter Success
Island Lake	152	18	170	65.38	583	29.16
Waylett	70	20	90	34.62	544	16.54
Total	222	38	260	100.00	1127	23.07

*Table exclusive of elk taken.

White-tailed deer formed the largest part (85.4 per cent) of the deer harvest in the area, Table III. Generally, the mule deer range higher and farther from the roads and are therefore less apt to be seen by the average hunter. From Table III it can be seen that legal bucks composed 41.9 per cent of the kill and if buck fawns (not shown) were included, the bucks would make up 48.8 per cent of the total kill. In all there were 27 buck fawns taken and 29 doe fawns.

Table III. Buck-Doe-Fawn kill in the Fisher Wolf Creek area - 1952 antlerless deer season.

	White-tailed				Mule Deer			
	Bucks	Does	Fawns	Total	Bucks	Does	Fawns	Total
Number Killed	85	86	51	222	24	9	5	38
Per Cent of Kill	32.7	33.1	19.6	85.4	9.2	3.5	1.9	14.6

Age Composition of White-tailed Deer:

Jaws of 50.9 per cent of the white-tailed deer killed were collected and aged according to the Severinghouse method, by checking station personnel. These jaws were later rechecked to verify the ages first assigned. It was found that the age composition of the deer killed

ranged from one-half year old animals (fawns) to 10 plus years old, Figure II. One of the most important factors revealed in the age analysis is the reduction of the older age groups and a building up of the younger and more potential age groups, $1\frac{1}{2}$ years to $3\frac{1}{2}$ years old, inclusive. This is one of the major goals strived for in the management of deer herds. By comparing Figure III with Figure II, it can be seen that the proper age composition of the herd is being brought about, though it will require a few years data to verify the stability of this proper age distribution. In 1950, Figure III, the $2\frac{1}{2}$ and $3\frac{1}{2}$ age groups were at a minority when compared to the $4\frac{1}{2}$, $5\frac{1}{2}$, and $6\frac{1}{2}$ year age classes. Within the two preceeding years this unbalanced distribution has been radically changed so that now the great majority of deer (indicated by the composition of the kill) lie within the $1\frac{1}{2}$, $2\frac{1}{2}$, and $3\frac{1}{2}$ year age groups, which is desired. This also indicates that the proper increment harvest is taking place; however, it must be kept in mind that this is but one season's data which, alone, can be indicative only of the age composition trend.

Reproductive Potential:

As previously mentioned, few reproductive tracts were turned in by hunters. Of those obtained a few were incomplete or damaged, leaving 24 that could be analyzed.

The results of the laboratory analysis on the reproductive tracts showed that the 1952 breeding season had just begun when the hunting season closed. Corpora lutea were found in the ovaries of only one deer. Ruptured follicles were found in three ovaries but there was no luteinization of these follicles to indicate that fertilization of the egg had occurred.

Degenerating corpora lutea of the 1951 breeding season were found and can be used as a productivity indicator. From these scars, the number of fawns per doe in the 1952 fawning season was 1.2. This figure was obtained from 22 luteal scars and 16 sets of mature ovaries. The fertilization factor (.85) of deer in New York was used due to the lack of a factor for Montana deer.

Weights:

A total of 253 deer were weighed at the two checking stations. This is 97.3 per cent of the season's kill brought through the stations. Weighing was done by spring scales mounted on tripods.

Table IV. Comparison of the 1952 hog dress weights to the 1949 and 1950 seasons.

	No. Weighed	Smallest	Largest	1952 Average	1950 Average	1949 Average
White-tailed						
Buck	80	80	205	126.5	136.0	135.9
Doe	84	75	150	94.4	103.0	102.5
Fawn-doe	27	35	60	50.6	53.0	49.0
Fawn-buck	24	35	75	51.0	54.0	
Mule Deer						
Buck	23	85	225	140.7	165.0	174.0
Doe	10	85	115	97.7	132.0	103.0
Fawn-doe	2	45	50	47.5	59.0	70.0
Fawn-buck	3	45	60	55.0	52.0	

Figure II.

PER CENT OF KILL BY AGE CLASS, 1952 ANTLERLESS DEER SEASON
FISHER RIVER-WOLF CREEK AREA

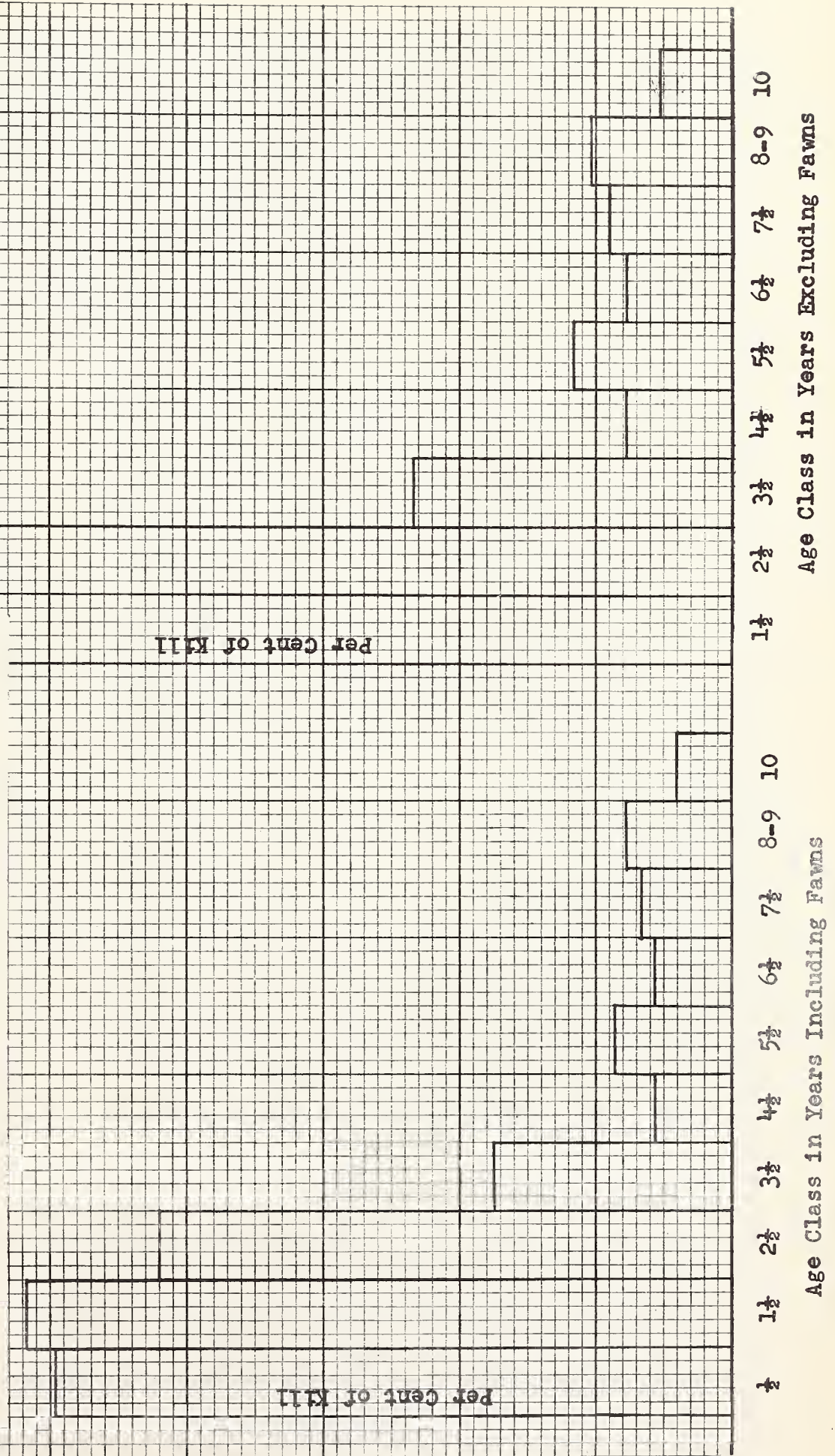
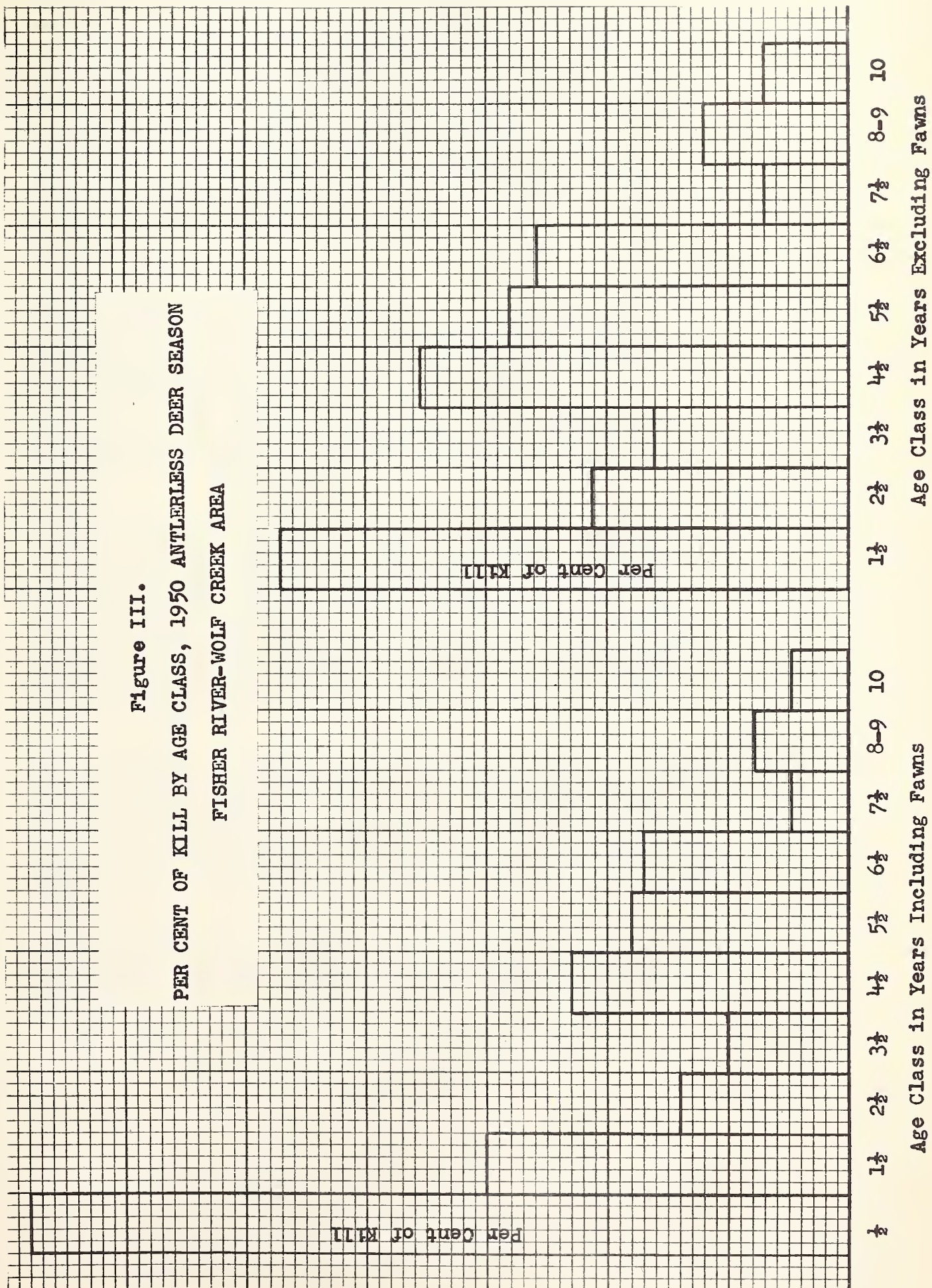


Figure III.
 PER CENT OF KILL BY AGE CLASS, 1950 ANTLERLESS DEER SEASON
 FISHER RIVER-WOLF CREEK AREA



By noting Table IV, it is well to point out the average weights of mature deer for 1949, 1950, and 1952. For white-tailed deer there is approximately 10 pounds average difference between 1952 and 1949 and 1950; the hog dress weight being lighter in 1952. In mule deer this same trend varies from 5 to 33 pounds. One major factor entering into this weight difference can be attributed to the greater snow depth during the winter of 1951-52 in conjunction with an overutilized range. However a greater number of weights are needed to get a more reliable weight trend.

Hunter Pattern:

As was expected, hunting pressure was the heaviest during the first two days, a week-end, of the special antlerless season, when 377 hunters killed 68 deer. This represents 33.5 per cent of the hunters and 26.2 per cent of the kill for the entire season. With the exception of the first two days there were no well defined week-end peaks of hunting pressure as normally expected, (see Figure IV).

Pressure and kill were far below expectancy during the five-day season extension, though there was an increase on the last day. This slump during the extension can, in a large part, be attributed to the fact that hunters who took vacations and time off during the regular season were not able to spend any more time in the field between November 16 and 20, inclusive. Twenty and eight-tenths per cent of the total kill was taken during the five-day season extension.

Fluctuation of the daily kill is shown in Figure V. Again the peak days of kill are shown as in Figure IV, which has already been summarized. The close correlation between buck, doe, and fawn kills might be pointed out in Figure V. It is interesting to note that, in general, the fluctuation trend for all three was about the same over the entire season.

Figure VI shows the cumulative kill in the Wolf Creek-Fisher River area, and again points out the peak days of hunting pressure.

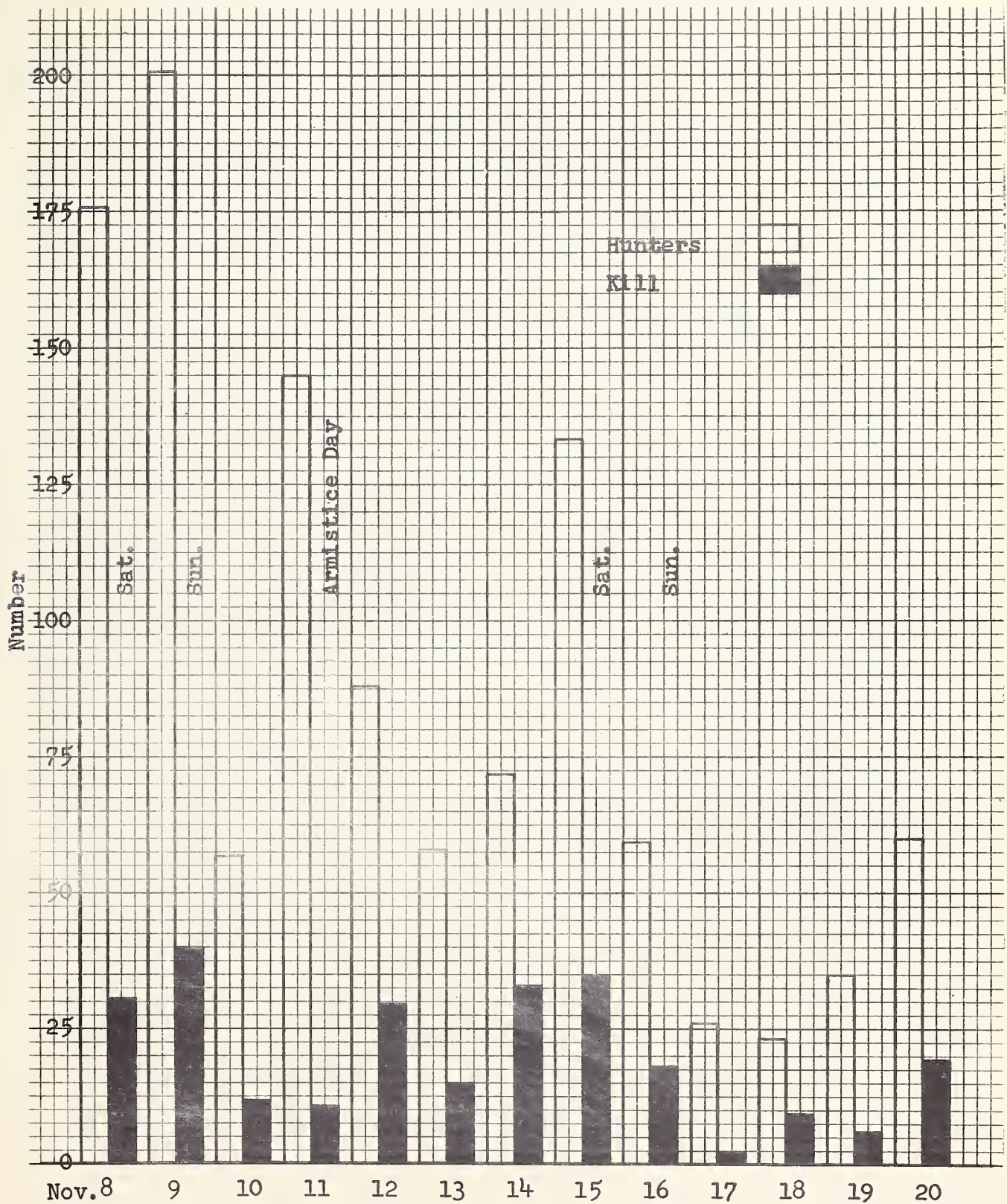


Figure IV.

HUNTING PRESSURE AND DAILY KILL, 1952 ANTLERLESS DEER SEASON
FISHER RIVER-WOLF CREEK AREA

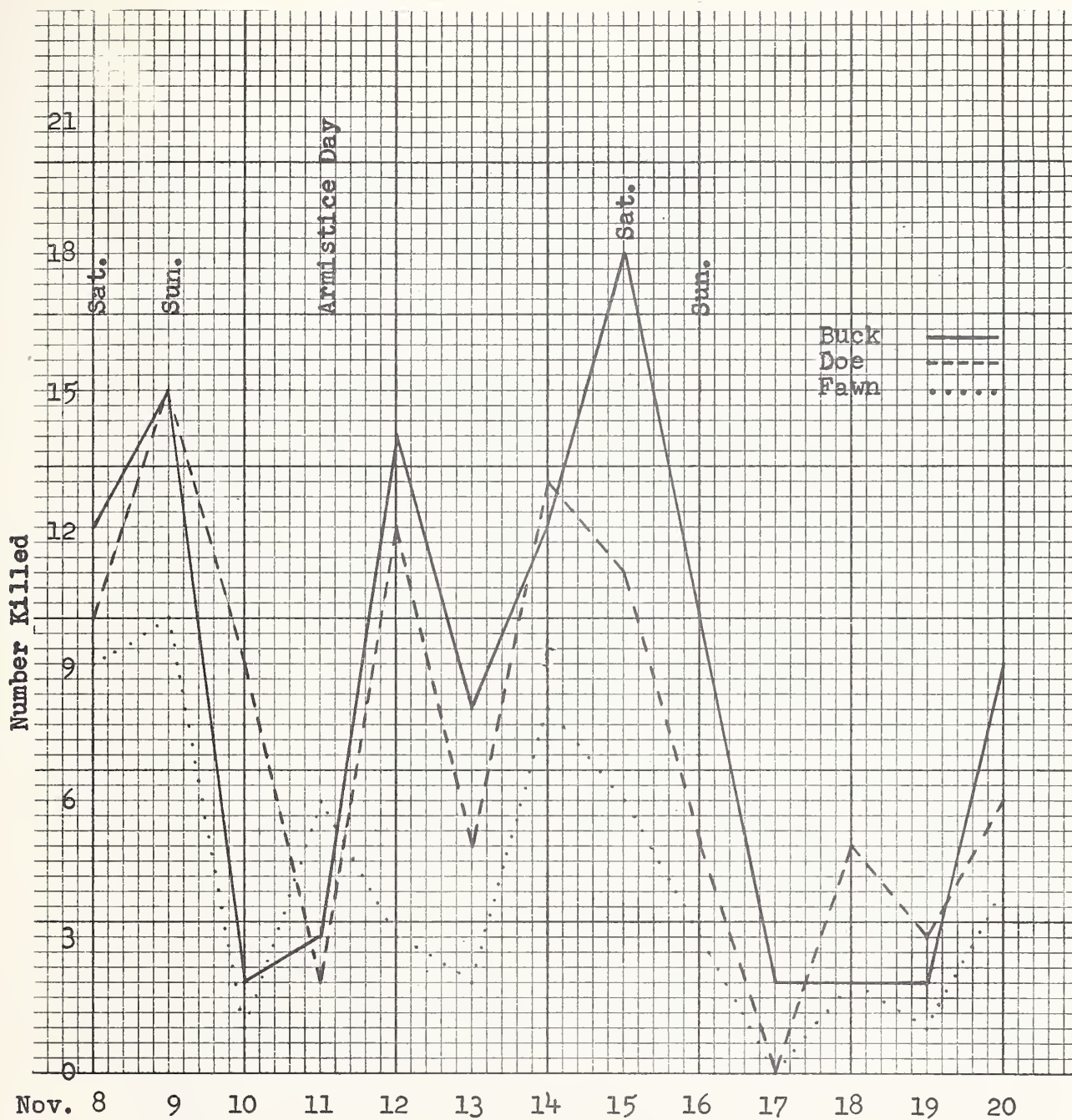


Figure V.

DAILY KILL OF DEER, 1952 ANTLERLESS DEER SEASON
FISHER RIVER-WOLF CREEK AREA

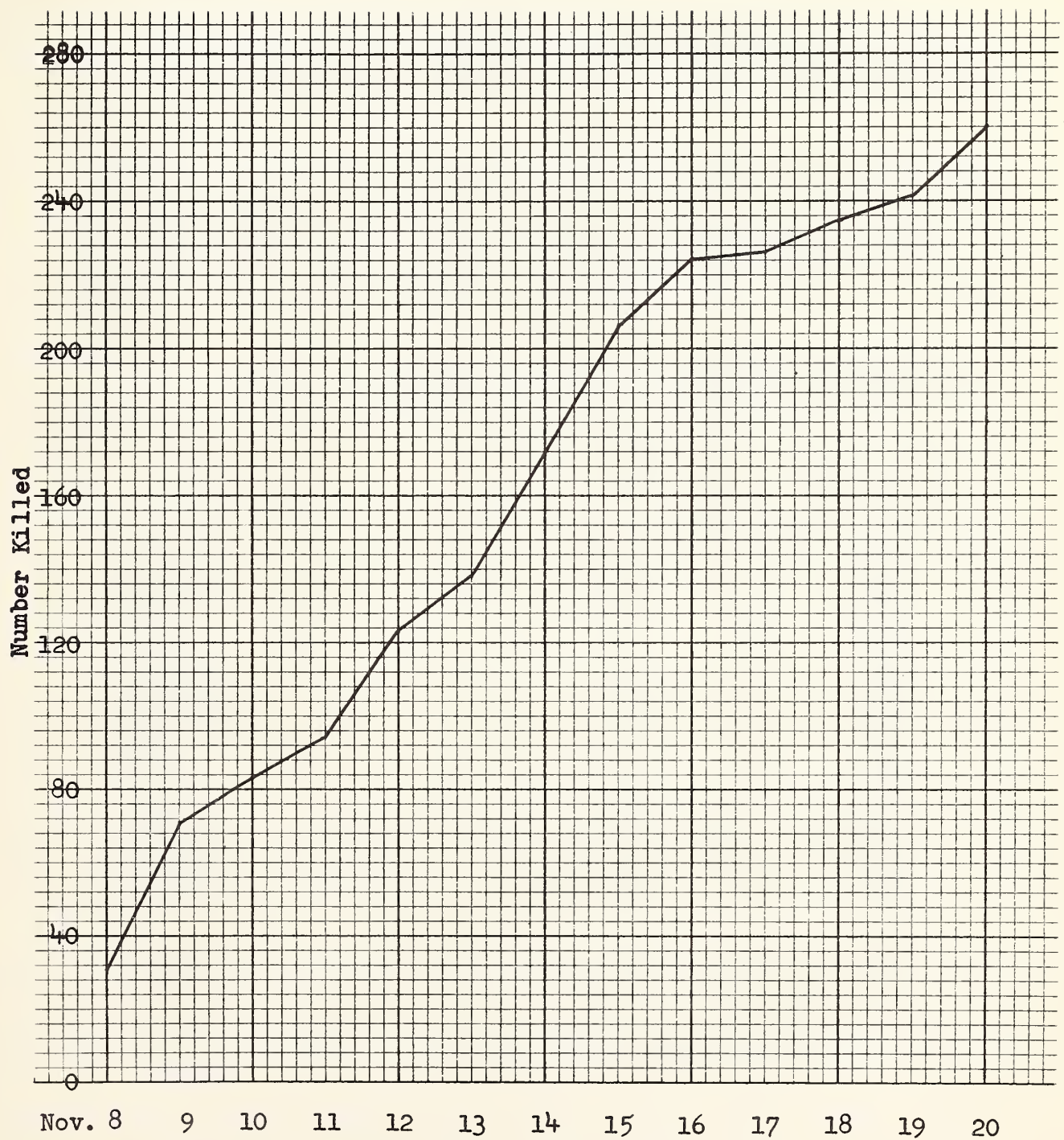


Figure VI.
CUMULATIVE DEER KILL, 1952 ANTLERLESS DEER SEASON
FISHER RIVER-WOLF CREEK AREA

Source of Hunters:

Fourteen Montana counties and two other states were represented by successful hunters in the Wolf Creek-Fisher River area during the 1952 antlerless deer season. States other than Montana were Nebraska and Washington.

Flathead County, as in 1949 and 1950, furnished the largest percentage of successful hunters, 47 per cent, while Lincoln County was second with 15 per cent of the successful hunters, (see Table V). Following Lincoln County were Lake, Glacier, and Pondera Counties. These five counties comprised 86 per cent of the total number of successful hunters in the area.

Table V. Source of successful hunters in the Wolf Creek-Fisher River area during the 1952 antlerless deer season.

County	No. of Hunters	% of Total
Flathead	125	47.0
Lincoln	40	15.0
Lake	39	14.6
Glacier	15	5.6
Pondera	10	3.8
Roosevelt	8	3.0
Sanders	6	2.3
Hill	5	1.9
Toole	4	1.5
Cascade	1	0.4
Richland	1	0.4
Chouteau	1	0.4
Liberty	1	0.4
Unknown	7	2.6
State		
Washington	2	0.8
Nebraska	1	0.4
Total	266	100.0

Record of home counties and states was kept only for successful hunters rather than for all hunters, as has been the practice in the past. An estimated 93 per cent of all hunters stopped at

the checking stations upon leaving the hunting area, however only those that were successful were detained for technical data.

Calibers of Guns Used:

Twenty-five gun calibers, ranging up from a .22 Hornet, as shown in Table VI, were used to kill deer and elk in the Wolf Creek-Fisher River area. The gun most used was the 30-06, followed by the 30-30 and then the 300 Savage.

Table VI. Calibers of guns used by successful hunters in the Wolf Creek-Fisher River area during the 1952 antlerless deer season.

Caliber	Number	Caliber	Number
30-06	75	.38-55	2
30-30	53	.348	2
.300 Sav.	31	.35 Auto.	1
.270	23	.25 Rem.	1
.30-40	16	.35 Win.	1
.32 Spl.	13	.300 Mag.	1
.25-35	10	.32 Win.	1
.250-3000	6	.22 Hornet	1
.35 Rem.	6	.38 Win.	1
.303	3	.250 Sav.	1
8mm.	3	.351 Win.	1
.33 Win.	3	.30 Ml	1
.303 British	2	Unknown	8

CONCLUSIONS:

1. Even though the weather conditions were a hindrance to hunters the success was 23.48 per cent.

2. White-tailed deer formed 85.4 per cent of the total deer kill in the area.

3. Legal bucks made up 41.9 per cent of the total recorded deer harvest in the area.

4. Lower jaws from 50.9 per cent of all white-tailed deer were collected and aged by the Severinghouse method. Age of deer harvest ranged from 6 months to 10 plus years.

5. Excluding fawns (6 months) the age groups of $1\frac{1}{2}$, $2\frac{1}{2}$, and $3\frac{1}{2}$ years made up 73.8 per cent of the harvest. In 1950 60 per cent of the harvest was $4\frac{1}{2}$ years or older. The present age composition is indicative of response to herd management.

6. The analysis of reproductive tracts showed that the 1952

breeding season had just begun at the close of the hunting season. From degenerating luteal scars the fawns per doe for the 1951 breeding season was found to be 1.2.

7. The average weight of deer killed this season was lower than that recorded in both the 1949 and 1950 seasons.

8. Hunting pressure was greatest during the first two days of the antlerless season, representing 33.5 per cent of the total hunters and 26.2 per cent of the total kill.

9. Both the number of hunters and kill was lower than expected during the five day extension of the antlerless season. Twenty and eight-tenths per cent of the total kill was taken during this five day period.

10. Flathead County furnished 47 per cent of the hunters in this area while Lincoln County followed with 15 per cent.

11. Twenty-five gun calibers were used by the successful hunters in this area, with the 30-06 leading in number.

RECOMMENDATIONS:

Being unfamiliar with local conditions of range and game populations, recommendations cannot be justified until more intensive ground work can be accomplished.

B. 1952-53 Deer Trapping and Tagging Program

Plans were drawn up in the fall of 1952 for the winter deer trapping season. Traps were repaired and trapping sites were located in the field. Prior to the coming of deep snow the ten box-type traps were taken to the field and assembled at their respective locations along the lower Fisher River and lower Wolf Creek. Trapping was started on the 6th of January, though weather conditions were not favorable at that time for a trapping program. Deer had not moved onto the winter range due to the extremely mild weather.

Weather conditions remained mild throughout the month of January. As a result of this it was decided to temporarily abandon the trapping program for this year. Deer were not concentrated and the winter ranges were free of snow during the greater part of the month, thus resulting in an extremely poor catch. All traps were closed on February 1, 1953 with the plan of resuming the program with the coming of more snow. The winter remained very mild with little persistent snow and trapping was not resumed for the 1952-53 winter season.

Submitted by:

Name Robert M. Blair
Title Junior Biologist

Approved by:

Montana State Department of Fish and Game
By Robert F. Cooney, Director
Wildlife Restoration Division
Date April 15, 1953

PROGRESS REPORT

INVESTIGATIONS PROJECTS

State of Montana

Project No. W-36-R-3

Work Plan No. X

Title of Work Plan: Thorough Investigation of Wildlife Resources
Within and Adjacent to the Proposed Floodage
Basin of the Libby Dam (Army Engineers Corps)
on the Kootenai River in Lincoln County

Big Game:

Work was begun on censusing white-tailed and mule deer in two of the areas of heaviest concentration, namely, Canoe Gulch on the Horse Range for white-tail and Parsnip Flats for mule deer. Close watch was kept on both of the areas with the intention of using them as indices of probable movement of both species toward regularly used winter ranges in more inaccessible country. As in other big game studies this season, results were disappointing because of the failure of the animals to make any concerted movements during the period.

Fur Bearers:

Impassable roads on the east side of the Kootenai River made it difficult to reach creeks on that side for the purpose of censusing and placing territories of those species active during these months. A boat and motor was loaned to this project by Ross Wilson to facilitate this phase of the work.

Lack of tracking snow further complicated the carrying out of purposes.

Beaver, largely inactive during this time, will be concentrated on in the late summer and early fall.

Trappers are now being contacted to obtain data on overall takes for this winter.

Waterfowl:

First concerted northern movement of ducks was observed Friday, February 13, when 82 scaup were observed. Since that time, there have been more or less steady arrivals of mallard, pintail, baldpate, American golden-eye and merganser. Close watch is now being kept on the pairs that break away from the large groups to determine nesting areas and as many nesting sites as possible. Nest counts and size of broods will be taken from the time eggs are laid until the young are able to fly. Help in planning this work and its techniques has been asked of Wynn Freeman.

Upland Game Birds:

Other than a daily recording of observations of these species, nothing has yet been done intensively.

Prepared by D. P. Couvillion Approved by Robert F. Cooney
Date April 15, 1953

STATE Montana
PROJECT NO. W-37-R-4
DATE April 15, 1953
VOL. IV NO. 1

QUARTERLY PROGRESS REPORT FOR
INVESTIGATIONS PROJECTS

As Required by

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Game Range Predevelopment Survey.
2. Leader: Richard L. Hodder, Range Biologist
Carter Rubottom, Technical Assistant
3. Report of Progress:

Work Plan I: Gallatin Winter Elk Range

- Job I-A: Range (Forage Inventory) Survey
Proceeding according to plan.
- Job I-B: Forage Production and Utilization Transects
Inactive during report period.
- Job I-C: Spring Use and Trampling Test
Discontinued indefinitely.
- Job I-D: Browse Withstandability Tests
Final report and analysis not yet completed.
- Job I-E: Photo Plot Transects (Trend Study)
Inactive during this quarter.
- Job I-F: Forage Restoration Studies
Inactive during report period.
- Job I-G: Weather Data
Information and data were accumulated and recorded according to plan.
- Job I-H: Seed Analysis
Inactive during report period.
- Job I-I: Fertilizer Trials
Inactive during report period.
- Job I-J: Herbarium
Inactive during report period.
- Job I-K: Stomach (Paunch) Analysis
Discontinued until satisfactory means of identification and analysis of contents is determined.

Work Plan II: Sun River Winter Elk Range

Job II-A: Winter Elk Range Examination

This program was limited by an extremely mild winter. Many observations were made but because of lack of snow and ordinary winter conditions the desired observations were impossible.

Job II-B: Photo Plot Transects (Trend Study)

Inactive during report period.

Job II-C: Range (Forage Resource) Survey

Because of the extremely mild winter in this area, planned flights to determine the acreage of the range that is usually covered by deep snowdrifts were not made. This information must be obtained next winter.

Observations of winter elk feeding habits on the game range were made, but because true winter conditions were lacking, the desired observations were not possible.

Work Plan III: Blackfoot-Clearwater Game Range Studies

Job III-A: Forage Evaluation and Nutrition Studies

The program as set up during the last quarter was effectively carried out. Several unforeseen circumstances developed which affected the outcome of the feeding trials of this season, the most important of which was the development of a foot-rot condition among some of the elk during the final stages of the experiment.

One major difference or development in the feeding system beyond the original plans was in placing before specific elk large amounts of browse of various species so that all species were present in significant amounts.

Data and analysis of the findings are not yet compiled.

Submitted by:

Approved by:

Name Richard L. Hodder

Montana State Department of Fish and Game

Title Range Biologist

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

STATE Montana
PROJECT NO. W-38-R-4
DATE April 15, 1953
VOL. IV NO. 1

QUARTERLY PROGRESS REPORT FOR

SURVEYS AND INVESTIGATIONS

As Required By

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Upland Game Bird Surveys and Investigations
2. Leader: William R. Bergeson, Biologist
3. Report of Progress:

Work Plan I: Ring-necked Pheasant Survey and Investigation - State-wide

Job I-A: Pheasant Breeding Populations and Production
Inactive during report period.

Job I-B: Pre- and Post-Season Sex Ratios and Hunter Harvest
Reports attached.

Job I-C: Postcard Survey of Hunter Harvest
Inactive during report period.

Job I-D: Pheasant Mortality and Causes
Report attached.

Work Plan II: Survival of Game Farm Reared Exotics

Job II-A: Survival of Game Farm Reared Pheasants
No active field work during report period. Summary report of past work attached.

Job II-B: Survival of Chukar Partridge
Progress report attached.

Job II-C: Survival of Valley Quail
Inactive during report period. Three male California quail have been observed at the Moiese Game Farm.

Work Plan III: Ring-necked Pheasant Ecological Survey - Flathead Valley
Final report has been edited and is in process of publication.

Work Plan IV: Pheasant Habitat Development Investigation
Inactive during report period.

Work Plan V: Prairie Grouse Management Study

Job V-A: Range and Distribution of Prairie Grouse Species
Proceeding according to schedule.

Job V-B: Population Trends and Breeding Potential Studies
Proceeding according to schedule.

Job V-C: Prairie Grouse Experimental Areas
Inactive during report period.

Job V-D: Effect of Civilization on Prairie Grouse
Inactive during report period.

Job V-E: Habitat Development
Inactive during report period.

Job V-F: Life History and Biology of Prairie Grouse Species
Notes and data are being gathered and will be incorporated in suitable reports when warranted.

Work Plan VI: Mountain Grouse Management Study

Job VI-A: Determine Range and Relative Abundance of Mountain Grouse Species
Final report in progress.

Job VI-B: Experimental Grouse Management Areas
Inactive during report period.

Job VI-C: Mountain Grouse Ecology and Life History Study
Observations made during the past ten years will be incorporated in a report now in progress.

Submitted by:

Name William R. Bergeson

Title Game Bird Biologist

Approved by:

Montana State Department of Fish and Game

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

PROGRESS REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-38-R-4

Work Plan No. I

Job No. I-B

Title of Job: Pre- and Post-Season Sex Ratios, and Hunter Harvest

To determine pheasant sex ratios before and after the season, road counts were made in the major pheasant areas throughout the State.

The pre- and post-season sex ratios for the 1951 and 1952 seasons are tabulated in the following table.

PRE- AND POST-SEASON SEX RATIOS*

AREA	PRE-SEASON 1952	POST-SEASON 1952	POST-SEASON 1951
Fairfield	1:0.78	1:7.36	1:6.9
Conrad	1:0.86	1:5.08	1:5.5
Flathead	1:1.43	1:4.42	1:3.2
Hardin	1:0.86	1:2.87	
Miles City	1:0.75	1:2.14	
Sidney	1:0.80	1:2.06	
Bitterroot		1:1.6	1:2.0

*The above ratios are expressed as cocks to hens.

The post-season sex ratio counts for the 1952 season exhibit quite a large range.

The sex ratio difference between the Flathead and Fairfield areas is probably due to the abundance of escape cover that is present in the Flathead area. For all practical purposes the hunting pressure in the two areas was the same. This differs from the Sidney and Bitterroot areas where the hunting pressure seems to be the controlling factor. These areas have a low hunting pressure in comparison to the Flathead, Fairfield, and Conrad areas.

Prepared by Dale Witt

Approved by Wm. R. Bergeson

Title Fieldman

PROGRESS REPORT

INVESTIGATIONS PROJECTS

State of Montana

Project No. W-38-R-4

Work Plan No. I

Job No. I-D

Title of Job: Pheasant Mortality and Causes

Personnel: Dale Witt and Harold Gartside

Purpose:

To investigate predation and a reported decline in the pheasant population along Big Muddy Creek from Medicine Lake to Redstone, in Sheridan County.

Procedure:

Interviews of local sportsmen and Deputy Game Warden, Harold Gartside, were made regarding predation and pheasant populations in the area.

Sex ratio counts were made in the area by driving the roads and fields adjacent to Big Muddy Creek.

Findings and Discussion:

The sportsmen of the area are of the opinion that the pheasant population had declined about three years ago and has been retarded since. They think that predation is probably the limiting factor in retarding the population. The predators thought to be responsible are the bobcat, fox and skunk. All of the sportsmen interviewed were in agreement to the fact that there has been a decline in the population but are not in agreement to the cause or to the factors that are now limiting the population.

An effort is being made to make a stomach analysis of the bobcats caught in the area this winter, the results of which will be in a later report.

A total of 122 pheasants was seen in two counts through the area, 60 males and 62 females, for a sex ratio of 1 cock to 1.03 hens. This is a high percentage of cocks in the winter population in comparison to areas with a high population of pheasants. The high percentage of cocks would seem to indicate low hunting success, which may be due to low hunting pressure or a dispersal of pheasants after the opening day of the hunting season.

Recommendations:

An effort should be made in the area to attempt to determine the factors involved in retarding the population, also to obtain better population figures.

Prepared by Dale Witt

Approved by Wm. R. Bergeson

Title Fieldman

PROGRESS REPORT
INVESTIGATIONS PROJECTS

State of Montana Work Plan No. I Job I-D

Project No. W-38-R-4

Title of Job: Pheasant Mortality and Causes

The winter of 1952-53 in western Montana was relatively mild with less snow than usual. Pheasants were able to feed on waste grain and other ground level vegetation most of the winter due to the general absence of snow cover. Unseasonal rains in January tended to melt the snow that did fall.

Several road-killed pheasants and Hungarian partridges were examined each month during the winter. All were in good physical condition and most were very fat. Less road-killed pheasants were found during the winter of 1952-53 than during recent winters. This is probably due in part at least to the snow-free nature of the winter which made it unnecessary for the pheasants to go to the roads for grit or feed as they seemed to do during past winters.

It is suspected that possibly a differential winter mortality in the sexes occurs in Montana pheasant populations since it is believed that a higher ratio of hens perish. This apparently did not occur in the Flathead area as a post-season sex ratio of 4.43 hens per cock and a mid-February ratio of 4.7 hens per cock was observed.

Observations in western Montana during the winter of 1952-53 indicated that little mortality occurred in the pheasant population due to the relatively mild winter.

Prepared by Fred Hartkorn Approved by Wm. R. Bergeson

Title Biologist

FINAL REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. W-38-R-4

Work Plan No. II

Job No. II-A

Title of Job: Survival of Game Farm Reared Pheasants

INTRODUCTION:

Considering that the Montana Fish and Game Department finances the production of thirty to forty thousand pheasants annually, at a cost of about \$1.85 per bird based on 1951 production when 30,115 birds were reared at a cost of \$56,314.00, it was deemed advisable to expend some effort to determine the value of these birds to the hunter. This is not an original study, as almost every state rearing game farm pheasants has, at one time or another, initiated a similar type of study to determine the survival of these birds in the field. These studies have also generally been aimed at increasing the survival of the birds through application of better techniques at the game farm and at time of release.

This report summarizes several related short-time studies that have been directed toward various phases of the over-all problem of survival of game farm reared pheasants in the field. These studies have all been reported previously as each was completed; therefore, details of each will not be included in this general summary.

SUMMARIES OF PREVIOUS REPORTS:

SURVIVAL STUDIES ON GAME FARM REARED PHEASANTS IN MONTANA - 1947

P-R Quarterly Report, Montana. April-June 1948

Moiese Bird Farm Study Area:

This study was an attempt to determine the value of providing food for juvenile pheasants at the time of release. It was also hoped to gain information of the relative survival of brooder-reared birds and those brooded by domestic hens.

Three separate releases of pen-reared birds were made in the study area. The first release was made without supplemental feeding. The second was made in the same area with supplemental food at the time of release. The third release was made with domestic hen-reared birds with supplemental food at the time of release. Six hundred and fifteen juvenile birds were released in all.

Survival data of these three releases were obtained by periodically searching the area for dead birds prior to the hunting season, from band returns during the hunting season, and by live-trapping in the study area during

the winter months. A total of 119 (19.3 percent) of the pheasants on the study area were known to have perished prior to the hunting season. Bands from 21 birds (3.4 percent) were recovered during the hunting season, and 45 (7.2 percent) of the banded birds were live-trapped during the winter months.

Predators accounted for a number of deaths in spite of the area being enclosed by a semi-predator proof fence and the efforts of the caretaker who carried on a predator control program throughout the summer.

It was not possible to detect any beneficial effect from the feeding, nor was any difference evident in the birds reared by the two methods.

Fairfield Bench Study Area:

The purpose of this study was to determine the survival rates on eight and nine-week old pheasants released in midsummer. An attempt was also made to determine the difference in survival following different release methods.

On August 5, 1947, five hundred nine-week old banded birds, including 239 cocks, were released at eight different stations. Five of these stations were on small refuge areas. These pheasants were released by sportsmen in any manner they saw fit.

On August 7, 1947, five hundred and one banded pheasants were released in the same area. Of the 225 cocks in this group, 75 were eight weeks old and 150 were nine weeks old. These birds were carefully released at seven stations of which none were in refuge areas.

Band returns on these cocks were the only source of information in these studies. Out of the 464 banded cocks of both ages, 62 bands (11.2%) were recovered. There was no significant difference in returns between the two release methods. The returns from the various stations ranged from 0 percent to 22.2 percent.

BAND RETURNS FROM GAME FARM RELEASED PHEASANTS IN 1947

Bear Facts and Fish Tales, Montana. April, 1948:

This project was initiated to determine the survival of game farm released pheasants. All pheasants released by the three game farms were banded with metal tab type bands. Considerable publicity was given the project and hunters were urged to turn in all bands recovered.

A total of 21,595 game farm reared, banded cocks were released in 1947. Seven hundred and eighty-eight bands (3.6 percent) were returned by hunters after the 1947 hunting season. Forty-four bands (.2 percent) were recovered from these cocks after the 1948 season.

BAND RETURNS FROM GAME FARM RELEASED PHEASANTS IN 1948

Bear Facts and Fish Tales, Montana. February, 1949:

All pheasants released from game farms in 1948 were banded with aluminum butt-end bands. A total of 17,066 juvenile cocks was released. This project was given wide publicity to encourage the return of all bands recovered by the hunters. Returns were somewhat higher than in 1947 with 1,152 (6.7 percent) of the bands being returned.

BAND RETURNS FROM GAME FARM PHEASANTS RELEASED IN 1948

P-R Quarterly Report, Montana. January-March 1949

Fairfield Release Area:

The purpose of this study was: (1) to determine hunting returns on 12-14 week old pheasants released in midsummer, (2) to determine the value of releasing the birds on small refuge areas to increase survival, (3) to compare hunting returns from birds reared at three state game farms, (4) to compare hunting returns from birds reared by three different methods at the Billings game farm, and (5) to compare hunting returns with the results of the 1947 experimental releases in the area.

A total of 767 cocks were released on August 24, 1948, at fifteen sites (same sites as in 1947) of which five were refuges. Some birds from each game farm were released at each site.

Bands from 25.5% of the birds were recovered from hunters during and after the 1948 season and 1.7% during the 1949 season.

Band returns indicated that 25.5% of the 231 cocks released in refuge areas were bagged. Of the 536 birds released in open areas, 29.3% were harvested. The chi square test indicates that there is only a 60 percent degree of reliability that this is a real difference.

A total of 31.1% of the birds from the Warm Springs game farm, 27.1% of the birds from the Fort Peck farm, and 25.9% of the birds from the Billings game farm were reported bagged. These differences are not large enough to be significant.

A total of 26.4% of the hen hatched-hen reared cocks, 26.2% of the incubator hatched-brooder reared cocks, and 24.5% of the hen hatched-brooder reared cocks were reported shot. These differences are not large enough to be significant.

The results obtained from the various release sites were in general contradictory to results in 1947. Probably the habitat had not changed drastically over a one-year period. Thus, little can be stated regarding chances for survival at the different type release sites.

Bitterroot Release:

The purpose of this project was to: (1) determine hunting returns on 12-14 week old pheasants released in midsummer, (2) to compare hunting returns from the Warm Springs and Fort Peck game farm cocks, and (3) compare hunting returns with the returns from the Fairfield bench area.

Three hundred cocks from the Fort Peck farm and 254 cocks from the Warm Springs farm were released at ten sites in the Bitterroot valley. Birds from both farms were released at each site.

A total of 86 bands (15.7%) were returned during and after the 1948 season and one band (.2%) after the 1949 season for a return of 15.7% for this release.

A total of 16.5% of the Warm Springs cocks and 15.3% of the Fort Peck cocks were reported bagged. The difference in returns is too small to reliably show any difference in the two groups of birds.

The over-all returns from this study were only slightly more than one-half as much realized in the Fairfield area.

INVESTIGATION OF SPRING RELEASED HENS IN THE BITTERROOT AREA. 1949

P-R Quarterly Report, Montana. April-June 1949

The purpose of this study was to determine the survival and reproductive rate of pheasants held over the winter and released just prior to the breeding season. On March 4, 1949, 79 ten month old hatchery reared hen pheasants were released in the lower Bitterroot Valley. The wings and tails of these birds were dyed green to make field identification possible. Fifty-nine eleven month old hatchery reared pheasants, 50 hens and 9 cocks with red dye on most of the body were released in this area on March 29, 1949. These releases were checked twice weekly by walking through the area, checking from the roads, and contacting landowners.

The birds dispersed rapidly and some of them were observed five miles from the release point several weeks after release.

Remains of 22 (15 percent) of the dyed pheasants were found during the course of the study. In two cases goshawks were observed feeding on freshly killed dyed pheasants. Two hens were killed by hitting trees while flying. Four birds were found dead along the highway and were believed to be road kills. Cause of death could not be accurately determined for the other 13 birds found dead.

Dyed hens were observed in flocks containing both wild hens and cocks. No pheasant nests were found in the area.

Four wild hens and one dyed hen were observed with broods during the course of the study. Farmers contacted in the area reported observing two dyed pheasant hens with broods.

A TWO-YEAR STUDY OF PHEASANT STOCKING IN THE GALLATIN VALLEY, MONTANA

Edwin F. Roby. Jour. Wildl. Mgt. 15, (3), pp. 299-307

Summary by the Author

1. A detailed small scale study was conducted in Gallatin County, Montana, 1948-50 to secure survival data on game farm pheasants released in that area.
2. The data are evaluated on the basis of dispersal from release sites, band returns as influenced by method and place of release, relative importance of banded pheasants in the hunters' bag, and movements of game farm pheasants.
3. Four hundred and seventy-one game farm pheasants were released at four release sites by the gentle and violent release methods.
4. The data suggest a slower dispersal rate for the gentle release birds.
5. Band returns secured by the use of checking stations, traps, and hunter reports indicated a 14.4 percent return of released cocks.
6. No marked differences in the survival rates of gentle release pheasants and violent release pheasants were noted.
7. Only 21 (4.3 percent) of 493 pheasants checked at hunter checking stations in 1949 were game farm birds. Of the remainder 331 (67.1 percent) were wild juveniles, 119 (24.1 percent) were wild adults, and 22 (4.5 percent) were wild birds of unknown ages.
8. Movements from release sites to point of kill for 48 birds were determined. Twenty (41.7 percent) moved less than one mile, 24 (50 percent) moved from one to three miles, 1 (2.1 percent) moved from four to five miles, and 3 (6.2 percent) moved 9 to 14 miles. A greater percentage of gentle than violent release birds settled in the immediate vicinity of the release sites.

SURVIVAL OF GAME FARM PHEASANTS RELEASED IN THE BITTERROOT VALLEY - 1950

P-R Quarterly Report, Montana. January - March 1951

The chief purpose of this project was to determine the optimum age at which game farm pheasants should be released for maximum survival. Some information was also gained on the relative survival of birds raised in pens with no vegetative cover and in pens with a good growth of vegetation. In this study, 995 banded cocks were released in one group. These birds were divided into four age classes (8, 9, 11 and 12 weeks) and five weight groups (6-12 oz., 13-17 oz., 18-22 oz., 23-27 oz., and 28-36 oz.). Data were collected on this plant by field observation, by the collection of bands from hunters and by live-trapping following the hunting season.

Shortly after release 90 of these birds were found dead. A statistical analysis (chi square method) of the data from the age group classification indicates that there was a significantly lower survival in the eight-week

class, but no real difference was detected in the three older classes of birds. In the weight groups there was significantly lower survival of the 6-12 oz. group than the 12-17 oz. group and also a lower survival of the 12-17 oz. group than the heavier groups. When tested for significance by the chi square method the probability is about nine out of ten that these differences did not occur by chance.

This method of testing for significance also indicates that there was an actual higher survival of the birds that had the advantage of being raised in pens with heavy vegetative growth.

INVESTIGATION OF SPRING RELEASED HENS IN THE MOIESE AREA -- 1952

In the spring of 1952, 27 game farm hens were released in the Moiese Refuge. The hens were brailed and marked with red plastic neckties. It was assumed that they could not get over the woven wire fence surrounding the 80-acre refuge and an intensive study could be made on them. Four of the birds were found killed by predators, one was found incubating a clutch of twelve eggs on June 14. This nest was later destroyed, probably by a badger. There was no known reproduction from these birds, and by mid-summer they had disappeared.

Discussion:

One fact that is immediately apparent from these reports is that they all have the same weakness. The lack of band returns has, in most instances, made it virtually impossible to draw any valid conclusions from these studies. In general from seventy percent to ninety-six percent of the cocks banded and released have remained unaccounted for. Several possibilities have been suggested as to the fate of these birds: (1) They may have been shot and the bands not recovered, (2) they may have died before the hunting season, or (3) they may have survived the hunting season and remained in the population. It is probable that it is a combination of these three possibilities that accounts for the missing birds.

It is recognized that all hunters do not turn in the bands that they recover. It has been the usual practice in Montana to set up checking stations to attempt to collect bands from the hunters, but this has never been too successful, partly due to the number of roads leading from the hunting areas and also due to lack of personnel to run the checking stations. The results of Roby's study in the Gallatin Valley indicates that voluntary returns of the bands is as satisfactory as attempting to collect them at checking stations. Both methods were tried during the course of his study and the results were about equal.

The studies have shown that there is a high initial mortality of game farm birds. In 1947 when 615 juvenile birds were released on the Moiese study area, 119 (19.3 percent) of them were found dead within two weeks of being released. Of the 995 cocks released in 1950 in the Bitterroot Valley, 90 (9%) were found dead near the point of release. These releases were made in relatively heavy cover and it was not possible to find all of the birds that died. To attempt to estimate the actual number that succumbed would be

mere speculation but it is reasonable to suppose that it exceeded the known number by a large margin.

It is improbable that many of the released birds live over a year. The band returns the hunting season after the release have consistently been under one percent of the total birds released. Wildlife technicians have assumed that there is approximately an eighty percent turnover in wild population of game birds, so it is not unreasonable that the returns of less than one percent are realized from these game farm birds.

The study conducted in the Bitterroot Valley in 1950 produced some results that were statistically significant. There was a higher initial mortality among the younger, lighter birds than in the older, heavier members of the group. The older, heavier birds also showed up in the hunters' bag more frequently than did the younger, lighter ones. This indicates that a higher survival to the following hunting season may be expected if the birds are retained on the game farm until they are ten weeks old or until they attain a weight of seventeen ounces.

The relative survival of birds reared in pens containing good vegetative cover as contrasted with the survival of those birds reared in pens lacking this cover was also fairly conclusive. The birds from the vegetated pens were apparently better adapted to wild conditions than were the others. This fact was evident from the initial mortality of the two groups as well as from the band returns during and after the hunting season.

It was not possible to draw any valid conclusions from the studies attempting to evaluate the methods of release or those that attempted to differentiate between various types of habitat at the release points. Band returns were too meager and the difference too small to provide definite information on these factors. An attempt was also made to ascertain the differential survival of game farm birds that had been reared by various methods at the farm. These studies ended without definite conclusions due to the small numbers of bands that were recovered. This weakness of this type of study also invalidates the work that was done in connection with releasing preconditioned birds and birds directly from the brooder pens.

Two of the survival studies in this series were concerned with the advisability of releasing hens in the spring. Of the 129 hens released in the Bitterroot Valley in the spring of 1949, 22 (15%) were found dead in the study area. Three of the birds were known to have produced broods, but again we are faced with being unable to account for the fate of the majority of the birds. Undoubtedly more birds died than were found and it is probable that some broods remained undetected.

The study conducted in the spring of 1952 on the Moiese Refuge was also inconclusive in that the fate of the majority of the birds was unknown.

Based on postcard surveys, Montana pheasant hunters in 1950 harvested 211,300 cocks while in 1952, they harvested 257,800 birds. Game farm releases in 1950 totaled 30,728 birds and in 1952, 33,723 birds. Cock releases for these two years would be 15,364 and 16,861 birds respectively if it is assumed that the standard game farm production is nearly equally divided

between cocks and hens.

If we assume that there was 100 percent survival of these game farm produced cocks from the time of liberation to the hunting season, and if we further assume that each of these cocks was harvested during the hunting season, it is evident that game farm pheasant production contributed 7.3 and 6.5 percent respectively to the total kill in 1950 and 1952.

Actually, the only way to assure a total harvest of game farm cocks would be to have the hunter shoot the birds as they are released from the crates. The true survival rate of game farm birds lies somewhere between the two fallacious extremes of no survival and complete survival. If we accept a hypothetical maximum of 50 percent of all released cocks surviving to the hunting season, and then assume that each individual is shot by a hunter, it requires little imagination to see that these birds are not only extremely costly, but also contribute little better than three out of every 100 birds in the hunter's bag--the other 97 being wild-reared birds.

If these conclusions are valid, then it is also evident that considerable amounts of money are being wasted each year trying to make good hunting conditions better through continued releases of game farm birds. Game farms have been in continual operation in Montana since 1930 and it is difficult to believe that any suitable coverts have been overlooked in the stocking program during the intervening years. In all areas having suitable habitat these birds have become established and further stocking is unnecessary; in other areas where pheasant populations have not become established it would seem to be very doubtful that continued stocking would improve the situation.

Conclusions and Recommendations:

A relatively high initial mortality occurred after game farm pheasants were released on most of the study areas. This, coupled with the low band return from hunters indicated that survival of game farm pheasants after release was low.

Autopsy of some of the birds found dead indicated disease as probable cause of death. An effort should be made to determine presence of disease at the game farms and eliminate it if possible. Sick or weak birds should not be released in order to minimize the spreading of the disease to wild pheasant populations.

A higher survival rate may be expected if pheasants are not released from the game farms until they are ten weeks old and weigh over ten ounces.

Birds reared in pens containing good growth of vegetative cover survive better after release than birds reared in pens bare of vegetation. It would seem wise to attempt to have vegetative cover present in the pens at the game farms.

Lack of band returns from most of the experimental releases have limited the conclusions that can be drawn from these studies. Thus, further projects of this type should be conducted in an area where more positive control over hunters and hunting is possible in order to insure maximum return

of bands.

Investigation of hen pheasants released in the spring, although inclusive due to disappearance of the experimental birds, indicated a relatively high mortality soon after release. Some hens that had been brailed were not capable of good flight as long as two weeks after release, suggesting that previous brailing had lessened their chances for survival after release. Brailed hens that were released on the Moiese study area soon disappeared. It was thought that predators accounted for a high percentage of them due to their inability to fly.

To insure maximum utility of game farm reared pheasants, production should be geared to capacity in such a way that birds could be held beyond the 10-14 week maximum as now practiced. Under the present system, to hold birds beyond this age would probably result in heavy mortality at the farms as a result of feather picking and cannibalism induced by overcrowding; thus it becomes mandatory to release birds at relatively immature stage. By producing quality rather than quantities, cocks could be held for release shortly before the hunting season in areas where the quality of the habitat precludes the possibility of good natural reproduction; the hens could then be held for spring release in the better habitats consistent with game farm practices in other western states.

Submitted by Fred Hartkorn, Biologist

Approved by Wm. Bergeson

Wesley Woodgerd, Jr. Biologist

Wm. Bergeson, Biologist

Date February 10, 1953

PROGRESS REPORT

INVESTIGATIONS PROJECTS

State of Montana

Project No. W-38-R-4

Work Plan No. II

Job No. II-B

Title of Job: Survival Value of Chukar Partridge

The work carried out under this project consisted of selecting suitable release sites for the 1953 spring releases and attempting to ascertain the status of chukars at the former release sites.

Three release sites were chosen. These areas were considered the most suitable of all areas evaluated and chukars were released on them in March of 1953. One hundred and twenty birds were released at Davis Creek in Missoula County, 120 on the National Bison Range in Lake County, and 95 near Townsend in Broadwater County. In all cases the chukars quickly paired and dispersed. Pairs have been observed a maximum distance of two and one-half miles from the point of release.

It was impossible to obtain accurate population figures for the birds released prior to 1953. There are adult birds in six areas, and if a favorable nesting season is experienced, any or all of these groups may form the nucleus of an important population. These areas are (1) Ferry Basin in Lake County, (2) Valley Creek in Lake County, (3) Bluewater Creek in Carbon County, (4) Big Coulee in Stillwater County, (5) Fly Inn area in Big Horn County, and (6) Dillon area in Beaverhead and Madison Counties.

In our attempt to locate all chukars in the State, a news story on these birds was released. The story included a picture and a request for information as to the location of chukars. The result of this to date is a report of a group of about fifty chukars being seen southwest of Jordan, Montana. No chukars have been planted recently within about one hundred thirty-five miles of this area. If this report is true, it represents either a long migration of the planted birds or a remnant of chukars planted several years ago for which accurate planting records are not available.

Prepared by Wesley Woodgerd

Approved by William R. Bergeson

Title Junior Biologist

STATE Montana
PROJECT NO. W-39-R-4
DATE April 15, 1953
VOL. IV NO. 1

QUARTERLY PROGRESS REPORT FOR
SURVEYS AND INVESTIGATIONS

As Required By

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Waterfowl Surveys and Investigations
2. Leader: Wynn G. Freeman, Waterfowl Biologist
3. Report of Progress:

Work Plan I: State-wide Census

Job I-A: Aerial Waterfowl Census

Several aerial censuses of geese have been made along the Missouri River and in Flathead Valley.

Job I-B: Ground Waterfowl Census

Inactive during report period.

Job I-C: Study of Census Methods and Biology of Waterfowl in Flathead Valley

Inactive during report period.

Job I-D: Initiate A Comprehensive Study on Winter Populations of Waterfowl

The annual January waterfowl inventory was accomplished by personnel of the Restoration Division and deputy game wardens through cooperation of the game management agents of the U. S. Fish and Wildlife Service. Important areas received better census coverage this year through the increased use of light aircraft.

Work Plan II: Waterfowl Production Studies

Job I-E: Study of Relationships of Stockwater Reservoirs to Waterfowl Production

Field work was inactive during report period. A new phase of this study was planned and will be initiated in May.

Work Plan III: Evaluation of Hunter Harvest

Job I-F: Study of Hunter Harvest of Waterfowl
Inactive during report period.

Work Plan IV: Waterfowl Banding
A small number of mallards were banded at the Lewistown trap with the aid of W-1-R-12 and W-38-R-4 personnel.

Work Plan V: Pre-Acquisition Studies of Development Areas

Job I-H: Pre-Acquisition Study of Freezout Lake
Inactive during report period.

Job I-I: Pablo Refuge Management Investigation
Inactive during report period.

Job I-J: Blackfoot-Clearwater Habitat Development Investigation
on State Lands
Inactive during report period.

Job I-K: Sun River Waterfowl Habitat Investigation on State Lands
Inactive during report period.

Job I-L: Investigation of Potential Waterfowl Habitat for Development
Necessary data was assembled for the submission of a project for Chain of Lakes.

Necessary data was assembled for the submission of a project for Freezout Lake.

Preliminary planning and rancher contact work was done for the Brown's Lake waterfowl area.

Submitted by:

Approved by:

Name Wynn G. Freeman

Montana State Department of Fish and Game

Title Waterfowl Biologist

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

STATE Montana
PROJECT NO. W-41-R-4
DATE April 15, 1953
Vol. IV No. 1

FINAL PROGRESS REPORT

For

SURVEY AND INVESTIGATIONAL PROJECTS

As Required By

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Hunter Harvest Determination and Big Game Evaluation

INTRODUCTION:

Work on this project consisted of check station operation during the hunting season in critical areas and a state-wide card questionnaire following the hunting season.

BIG GAME QUESTIONNAIRE:

A sample of names from license book stubs comprising about five percent of the total was selected randomly as in previous years. Following is a sample of the card showing the information requested:

HUNTER REPORT OF BIG GAME KILL					
I killed the following big game animals: (Please check proper spaces)					
Species	General Season		By Permit		County of Kill
	Male	Female	Male	Female	
Mule Deer					
White-tailed Deer					
Elk					
Moose					
Antelope					
Bear					

I hunted big game but was not successful ☐
I did not hunt big game ☐

Name _____

Six thousand cards were sent, of which 104 were missent or answered unintelligibly. There was a usable return of 54% as compared to 55% a year ago. An error in reporting was found similar to last year whereby the kill figures were presumed to be exaggerated. The known antelope kill, based on previously made checks, was 26% less than that indicated in the card return. This ratio was presumed to exist in all big game returns and kill figures were reduced that amount.

Following is the compilation of data from card returns:

1952-53
HUNTER KILL CARD RETURNS
5% Sample

Total Number Hunters 115,230 54% of 6,000 cards sent

Species	% Male	% Female	Total Kill
Mule Deer	77	23	40,950
White-tailed Deer	64	46	12,896
Elk	55	45	6,422
Antelope	73	27	18,096
Moose	55	45	211
Goats	—	—	50
Black Bear	75	25	728
Grizzly Bear	—	—	10
Total			79,363

	%	Number
Did Not Hunt	4	4,609
Hunted, but Unsuccessful	27	31,112
Killed one animal	46	53,000
Killed two animals	19	21,894
Killed three animals	3	3,457
Killed four animals	1	1,152

Total 115,224

Sixty-nine percent (69%) of hunters were successful. The figure was 68% last year.

CHECKING STATIONS:

There were 31 check stations operated in big game areas. Standardized data sheets were kept on which were recorded kill by species and

other pertinent data to be used in management.

In certain areas specific biological data on productivity were collected.

SUMMARY OF ALL CHECKING STATIONS

Area	Total Elk	Total W -T. Deer	Total Mule Deer	Remarks
Continental Unit				
South Fork Flathead (Coram)	433	21	10	See Dec. 1952 Quarterly
Blackfoot (Bonner)	108	309	109	Report (W-l-R Western)
(Nevada Creek) (Avon)	7	15	10	" "
(Helmville) (Drummond)	16	26	25	" "
(Lincoln Canyon)		14	7	" "
(Swan River)	9	120	---	" "
Sun River (Canyon)	76	3	144	
(Willow Creek)	92		90	
(Elk Creek)	48	5	307	162 Bucks, 145 antlerless or doe deer
Clark Fork Unit				
Thompson River	6	45	21	See Dec. 1952 Quarterly
Little Thompson	3	73	5	Report (W-l-R Western)
Kootenai				
Island Lake	3	152	18	See Dec. 1952 Quarterly
Waylett's	3	76	23	Report (W-l-R Western)
McGregor Lake	---	97	10	" "
Gallatin-Yellowstone Madison Unit				
Squaw Creek	72	---	99	
Grayling Creek	8	---	32	
Ruby	22	---	424	(175 bucks and 249 antlerless mule deer)
Blacktail (2 Spot Checks)	62	---	64	
Corwin (Gardiner)	100	---	---	
Little Belt Unit				
Utica	212	---	308	
4 Spot Checks	338	---		
Beaverhead Unit				
Mill Creek	44	---	154	(75 bucks & 79 antlerless mule deer)
Divide	76	---	133	(76 bucks & 57 antlerless mule deer)

Area	Total Elk	Total W-T. Deer	Total Mule Deer	Remarks
Eastern Montana				
Matador	—	27	915	
Landusky	—	7	213	
Ashland (2 Spot Checks)	—	—	862	See Dec. 1952 Quarterly Report (W-l-R Eastern)

The Continental Unit comprising the Sun River, South and Middle Forks of the Flathead, Swan River and Upper Blackfoot had the following estimated kill:

1080 elk
702 mule deer
513 white-tailed deer
50 black bear
10 grizzly bear
50 mountain goats.

These figures necessarily include some estimates for unchecked areas and are considered conservative.

FINAL REPORT
of
Coram Checking Station
for 1952

Personnel: Jay Penny
Ratchford

Dates of Season: October 15 to November 20

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	133	193	29	35	43	433
Mule deer	8	1			1	10
White-tailed deer	7	3	3	6	2	21
Black bear	5	4		3		12
Mountain goat	6	1				7

Number of successful hunters checked - 469

Number of unsuccessful hunters checked - 2,654

FINAL REPORT
of
Bonner Checking Station
for 1952

Personnel: F. A. Gummer
A. H. McCarty

Dates of Season: October 15 - November 15 (Elk of either sex)
October 15 - November 7 (Buck deer only)
November 8 - November 20 (Either sex deer except
Powell County - Nov. 13-15
for either sex deer)

TOTAL GAME KILL

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	31	39	11	8	19	108
Mule deer	78	16	3	6	6	109
White-tailed deer	139	128	7	26	9	309
Black bear						5
Mountain goat						2

Number of successful hunters checked - 526

Number of unsuccessful hunters checked - 3,456

FINAL REPORT
of
Nevada Creek Checking Station
for 1952

Personnel: Dale Dearing

Dates of Season: November 13, 14 and 15, 1952

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	6			1		7
Mule deer	5	5				10
White-tailed deer	6	9				15
Black bear						1

Number of successful hunters checked - 33

Number of unsuccessful hunters checked - 210

FINAL REPORT
of
Helvmille Checking Station
for 1952

Personnel: F. A. Gummer

Dates of Season: November 13, 14 and 15, 1952

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	4	10	2			16
Mule deer	6	14	3	2		25
White-tailed deer	12	8	1	4	1	26

Number of successful hunters checked - 67

Number of unsuccessful hunters checked - 258

FINAL REPORT
of
Lincoln Canyon Checking Station
for 1952

Personnel: P. B. Marshall

Dates of Season: November 13, 14 and 15, 1952

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Mule deer	5	1		1		7
White-tailed deer	8	3		2	1	14

Number of successful hunters checked - 21

Number of unsuccessful hunters checked - 131

FINAL REPORT
of
Sun River Canyon Checking Station
for 1952

Personnel: Max Melton
James McLucas

Dates of Season: October 15, 1952 to November 15, 1952

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	39	37				76
Mule deer	144					144
White-tailed deer	3					3
Black bear	4	1				5
Grizzly bear			1			1

Number of successful hunters checked - 221

Number of unsuccessful hunters checked - 755

FINAL REPORT
of
Willow Creek Checking Station
for 1952

Personnel: Owen Wilson
Don Bailey

Dates of Season: October 15 to November 15

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	28	37	6	12 + 9	unknown	92
Mule deer	50		33	1	6	90
Grizzly bear	1					1

Number of successful hunters checked - 183

Number of unsuccessful hunters checked - 779

FINAL REPORT
of
Elk Creek Checking Station
for 1952

Personnel: Otto Hoffman
George McConn

Dates of Season: October 15, 1952 to November 15, 1952

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	9	18	6	7	8	48
Mule deer	124	47	73	25	38	307
White-tailed deer	3				2	5
Black bear	4	1	1	1		7

Number of successful hunters checked - 367

Number of unsuccessful hunters checked - 912

FINAL REPORT
of
Thompson River Checking Station
for 1952

Personnel: Mead

Dates of Season: November 8 to November 20

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	2	4				6
Mule deer	16	5				21
White-tailed deer	22	18	3	1	1	45

Number of successful hunters checked - 71

Number of unsuccessful hunters checked - 191

FINAL REPORT
of
Little Thompson Checking Station
for 1952

Personnel: Neil F. Blanchard

Dates of Season: November 8 to November 20

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	1	2				3
Mule deer	5					5
White-tailed deer	27	24	8	10	4	73
Black bear	1					1

Number of successful hunters checked - 82

Number of unsuccessful hunters checked - 176

FINAL REPORT
of
Island Lake Checking Station
for 1952

Personnel: Blaze Echo
Russell Hart
Al Watson

Dates of Season: November 8 to November 20

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	3					3
Mule deer	9	7	2			18
White-tailed deer	45	53	19	18	16	*151

Number of successful hunters checked - 173

Number of unsuccessful hunters checked - 413

*White-tailed deer total does not include 9 unknown-age male deer and 8 unknown-age female deer.

FINAL REPORT
of
Waylett's Checking Station
for 1952

Personnel: Charles F. Haschke
Grace M. Haschke

Dates of Season: November 8 to November 20

TOTAL GAME KILL -- 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	3					3
Mule deer	15	2	1	2	3	23
White-tailed deer	31	25	5	9	6	76

FINAL REPORT
of
McGregor Lake Checking Station
for 1952

Personnel: Bill Boothman
Francis Thompson

Dates of Season: November 8 to November 20

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Mule deer	5	3				*10
White-tailed deer	31	35	10	15	5	**96

Number of successful hunters checked - 107

Number of unsuccessful hunters checked - 538

*Mule deer total does not include 1 unknown-age male and 1 unknown-age female.

**White-tailed deer total does not include 6 unknown-age females.

FINAL REPORT
of
Squaw Creek Checking Station
for 1952

Personnel: Norman N. Wortman
Donald Jenni
Raymond Hays
Boles Sinkovitz

Dates of Season: October 15 to December 2

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	26	18	12	5	11	72
Mule deer	87	13				99
Black bear	2		1			3
Moose	9					9

Number of successful hunters checked - 166

Number of unsuccessful hunters checked - 3104

FINAL REPORT
of
Grayling Creek Checking Station
for 1952

Personnel: Alton L. Shupe
Carl S. Bittner, Jr.

Dates of Season: November 15 to December 1

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	4	2	1	1		8
Mule deer	20	7	2	2	1	*32
White-tailed deer	1					1
Moose	4	2				6

Number of successful hunters checked - 49

Number of unsuccessful hunters checked - 263

*Unrecorded - 2

FINAL REPORT

of

Ruby Checking Station

for 1952

Personnel: Frank Schryer
A. A. Schroeder

Dates of Season: October 15 to November 15

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	12	6		3	1	22
Mule deer	169	154	56	39	6	424
Black bear		1				1
Moose	11	5				16

Number of successful hunters checked - 462

Number of unsuccessful hunters checked - 1319

FINAL REPORT
of
Utica Checking Station
for 1952

Personnel: J. S. Ramsey
Mrs. J. S. Ramsey

Dates of Season: October 15 to November 15

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	34	97	33	24	24	212
Mule deer	243	4	2	1	58	308
Black bear	3		1	2		6

Number of successful hunters checked - 217

Number of unsuccessful hunters checked - 2091

FINAL REPORT
of
Mill Creek Checking Station
for 1952

Personnel: M. M. Critchfield

Dates of Season: October 15 to November 24

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk	18	15	1	2	8	44
Mule deer	55	55	8	16	20	154
Moose	5	2				7

Number of successful hunters checked - 205

Number of unsuccessful hunters checked - 2878

FINAL REPORT
of
Divide Checking Station
for 1952

Personnel: Henry W. Engbrecht

Dates of Season: October 15 to November 24

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Elk						76
Mule Deer	76	57				133
Black bear						1
Moose						9

FINAL REPORT
of
Landusky Checking Station
for 1952

Personnel: Herb Friede

Dates of Season: October 15 to October 26

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Mule deer	123	94	7	17		241
White-tailed deer	5	2				7

FINAL REPORT
of
Matador Checking Station
for 1952

Personnel: Purl Seibert

Dates of Season: October 15 to October 26

TOTAL GAME KILL - 1952

<u>Species</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Young Male</u>	<u>Young Female</u>	<u>Spikes</u>	<u>Total</u>
Mule deer						915
White-tailed deer						27

* * * * *

Submitted by:

Name Faye M. Couey

Title Big Game and Lands Biologist

Approved by:

Montana State Department of Fish & Game

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

STATE Montana
PROJECT NO. W-49-R-2
DATE April 15, 1953
VOL. VI NO. 1

QUARTERLY PROGRESS REPORT FOR

INVESTIGATIONS PROJECTS

As Required by

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Fur Resources Surveys and Investigations
2. Leader: Fletcher E. Newby, Junior Biologist
3. Report of Progress:

Work Plan I: Determination of the Economic Importance of the Montana Fur Resource.

Job I-A: Annual Yield and Income from the Fur Resource as Determined by Examination of Dealer Records.
Proceeding for 1951-52 season.

Job I-B: The Annual Fur Harvest as Determined from Analysis of Trapper Report Cards.
Proceeding for 1952-53 season. Arrangements are under-way for analysis of data by use of International Business Machines analysis cards. This will considerably reduce the amount of clerical work entailed in the survey. The trapper report card, a letter of explanation, the results of last year's reports and last year's average prices will be mailed to all trappers shortly after the close of the season.

Work Plan II: Survey of Fur Animal Distribution, Habitat and Population Status.

Job II-A: Extensive Survey of Fur Animal Distribution, Habitat and Population Status.
Proceeding.

Job II-B: Muskrat Population Trends.
Inactive during report period.

Job II-C: Survey of Beaver Distribution and Status in the Jefferson Basin.
Proceeding.

Job II-D: Population Status and Movements of Marten.
Proceeding. Maps showing the distribution of the 1950-51 and 1951-52 marten catches are being drafted to aid in the investigation of population status.

Field checks in various areas indicated that the past two seasons markedly reduced marten numbers in easily accessible areas.

Twenty-five marten have been tagged in the North Fork of the Flathead River study area. A good deal of preliminary information regarding these animals has been gathered and it is expected that this phase will be taken over by a student for a Master's thesis problem.

Job II-E: The Effect of Otter Food Habits on Fish and Fur Animal Populations.
Proceeding. Analysis of approximately 1,100 otter scats has been completed.

Job II-F: Distribution and Status of the Wolverine.
Completion report submitted in October-December Quarterly Report.

Submitted by:

Name Fletcher E. Newby

Title Junior Biologist

Approved by:

Montana State Department of Fish and Game

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

STATE	Montana
PROJECT NO.	W-5-D-11
DATE	April 15, 1953
VOL.	IV NO. 1

REPORT FOR
DEVELOPMENT PROJECTS

As Required By
FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: General Wildlife Restocking
2. Leader: James McLucas, Fieldman
3. Report of Progress:

"OPERATION COYOTE"

DATES: December 15, 1952 to March 31, 1953

PERSONNEL: James McLucas, Fieldman, Leader

PURPOSE:

The objective of this project was to control coyote predation on and adjacent to the mountain sheep range in the Sun River Canyon.

It was believed that this control would improve conditions for increased production among the mountain sheep.

The secondary objective of the project was to study the movement of mountain sheep and other big game animals in this area and their relationship to the above named predators.

Control of mountain lions, bobcats and golden eagles was incidental to the project.

PROCEDURE:

The first phase of this project was spent gathering equipment, cyanide guns, scents, motor vehicle, etc., and moving supplies into the cabins to be used in this area.

Most of the project was done on foot. Travel averaged about fifteen miles a day on all the major drainages in the Sun River Canyon area, and Willow Creek and Ford Creek in the adjacent region which is also mountain sheep range.

About 175 cyanide getter guns, loaned from the Fish and Wildlife Service Predator Control Section, were used in this program. They were placed about six or seven to the mile according to the number of coyotes in the area. Scent was changed several times to keep the coyotes from associating any danger with the same odor, as there may have been guns pulled when they were traveling in pairs. The guns were visited about every seven days as it took this long to make a trip through the entire area.

Weights of forty coyotes were taken (Table 1). About twenty-five stomach samples were collected and will be analyzed at Montana University. This analysis should help determine the incidence of predation on mountain sheep and other game animals in the area.

Coyote hides have always had some value as fur. The price has fluctuated from year to year, but during the last twenty-five years it has varied from \$25.00 to \$1.00 per skin. The downward trend in the price of coyote hides in the past ten years started a general upward trend in the coyote population. This may have led to an increased intensity of predation on livestock, big and small game, and all types of game birds at that time. However, with the coming of 10-80, a new poison used by the U. S. Fish and Wildlife Service, a very effective control has been reached on all farm and ranch land in the State. The coyotes were left untouched in the various primitive areas in which 10-80 was not used because of possible damage to fur-bearing species. In some of these areas, the coyotes have maintained high numbers. At times, their predation has appeared heavy on certain species of big game and game birds. Other means of control had to be used in these areas where predation was found to be serious. Two such programs have been carried out by the Montana Fish and Game Department. The first was carried out in the winter of 1947 and the spring of 1948 in the Gates of the Mountains area where mountain sheep had been planted in 1941. It was hoped that this control program would give the mountain sheep a better chance to build up in this area along with other game animals and birds.

A few years after this predator control program, a number of mountain goats were transplanted into this area and they are reported to be doing very well.

The second predator control program has been carried out in the Sun River Canyon which is historical mountain sheep range. The sheep in this area number about four hundred at present, and in the adjacent area of Willow and Ford Creeks, there are about forty to fifty mountain sheep. It is hoped that as a result of this predator control program these mountain sheep will show a decided increase in the future.

The major predator control work done in this area was carried out over thirty-five years ago by Bruce Neal, Deputy Game Warden at Augusta, Montana, when he took about sixty to seventy coyotes, a number of bobcats and several lions. Aside from this, only about fifty coyotes a year were taken by trappers. Since 1940, very few coyotes have been taken. This may account for the large number of coyotes in this area, and the apparent severe predation on game animals.

TABLE 1. Weights and Sex of Coyotes Taken

	Sex	Weight	Age	Drainage
1.	Female	26 lbs.	Mature	Gibson Lake
2.	Female	21 lbs.	Pup	Gibson Lake
3.	Female	25 lbs.	Mature	Gibson Lake
4.	Male	26 lbs.	Mature	Gibson Lake
5.	Female	25 lbs.	Mature	Gibson Lake
6.	Female	25 lbs.	Mature	Gibson Lake
7.	Male	35 lbs.	Mature	South Fork
8.	Male	28 lbs.	Mature	Gibson Lake
9.	Female	22 lbs.	Pup	Gibson Lake
10.	Female	22 lbs.	Pup	Gibson Lake
11.	Female	25 lbs.	Pup	Gibson Lake
12.	Male	28 lbs.	Mature	Gibson Lake
13.	Female	23 lbs.	Pup	South Fork
14.	Male	24 lbs.	Pup	South Fork
15.	Female	26 lbs.	Mature	South Fork
16.	Male	28 lbs.	Mature	North Fork
17.	Male	31 lbs.	Mature	Gibson Lake
18.	Male	27 $\frac{1}{2}$ lbs.	Mature	Gibson Lake
19.	Female	28 $\frac{1}{2}$ lbs.	Mature	Gibson Lake
20.	Male	28 $\frac{1}{2}$ lbs.	Mature	Gibson Lake
21.	Female	27 $\frac{1}{2}$ lbs.	Mature	South Fork
22.	Female	23 $\frac{1}{2}$ lbs.	Pup	South Fork
23.	Female	26 $\frac{1}{2}$ lbs.	Mature	Gibson Lake
24.	Female	28 lbs.	Mature	Blacktail Creek
25.	Male	31 lbs.	Mature	Willow Creek
26.	Female	25 lbs.	Pup	Willow Creek
27.	Female	26 lbs.	Mature	Wagner Basin
28.	Female	23 lbs.	Pup	Willow Creek
29.	Female	27 $\frac{1}{2}$ lbs.	Mature	Willow Creek
30.	Female	26 lbs.	Mature	Willow Creek
31.	Female	26 lbs.	Mature	Willow Creek
32.	Male	27 $\frac{1}{2}$ lbs.	Mature	Willow Creek
33.	Male	27 lbs.	Mature	Willow Creek
34.	Male	27 lbs.	Mature	Willow Creek
35.	Male	28 lbs.	Mature	Willow Creek
36.	Male	28 lbs.	Mature	Willow Creek
37.	Female	26 lbs.	Mature	South Fork
38.	Female	25 lbs.	Pup	South Fork
39.	Female	30 lbs.	Mature	South Fork
40.	Male	32 lbs.	Mature	Willow Creek

Average weight male coyote - 29 lbs.

Average weight female coyote - 27 lbs.

Average weight pup - either sex - 24 lbs.

Two actual cases of coyotes attacking and killing mature deer were witnessed by the author during the winter predator control program. One case was on the South Fork of the Sun River and one on the North Fork of the Sun River. In both instances the kill was made in the same way. The attack was made by a pair of coyotes that first cut the tendons in the hind legs of the deer and then attacked the intestinal area. Both deer were in good physical condition.

During the mountain sheep count in this area one case of coyotes chasing sheep was witnessed. But seeing us, they returned to the timber so it is not sure what would have happened if we were not there to drive them off. It seems logical that they would have made a kill.

Coyote Condition and Disease

Condition of all coyotes could be described as "hog-fat" and only one coyote was found to have a trace of mange. They were very heavily furred and in prime condition.

Lions

During this predator control operation on the north side of Gibson Lake, North Fork of Sun River, South Fork of Sun River, Blacktail Creek, Hannan Gulch and Wagner Basin and the main Sun River, only two lions were killed. Both of these were killed by Bruce Neal in December of 1952. One other track was seen at the head of Gibson Lake in December of 1952. No other lion sign was seen on any of the drainages on the north side of Gibson Lake or on the North or South Fork of the Sun River, where the majority of the sheep on the Sun River range are. Eight mountain lions were killed on the south side of the Sun River in the Beaver Creek drainage which is a heavy white-tail wintering area. Seven of these lions were taken by Mr. Slater of the Bureau of Reclamation. He treed the lions with the aid of dogs. One other lion was killed by hunters during the big game hunting season in the Beaver Creek drainage. There has been no other sign seen in this area after the killing of these eight lions. It is apparent from past history and from what has been observed this winter that the mountain lion seldom is seen on the north side of Gibson Lake, where the majority of the sheep range lies.

This may indicate that the chief predators here are the coyote and possibly the golden eagle.

Bobcats

Very few bobcats were in evidence above the mouth of the Sun River Canyon. Thirteen were known killed during the winter. The lack of bobcats might be blamed on the shortage of rabbits and grouse. Most of the bobcats have migrated to the lower foothills and stream bottoms.

Eagles

Golden eagles were observed on all of the mountain sheep range, but none were observed making a kill. Eagle predation is probably the highest during lambing season.

One interesting observation was made in an adjacent area to the sheep range by some ranchers who observed a golden eagle diving into his lambing yard and carrying off one of the lambs. A short time later this golden eagle returned and was killed by the rancher. He and some of the neighboring ranchers went up to a bench where this golden eagle had been observed before and found the remains of eleven lambs.

RESULTS:

It is yet too early to judge the effect this predator control program will have on the mountain sheep in this area. With the removal of this number of predators a decided change should be noticed this year in the deer and sheep population. As in past years, heavy deer and sheep losses have occurred in this area during the winter months.

During this period 118 coyotes were definitely checked as killed by cyanide "getters". Ten mountain lions and fifteen bobcats were also taken during the period. The bobcats were caught with steel traps while tending the coyote stations.

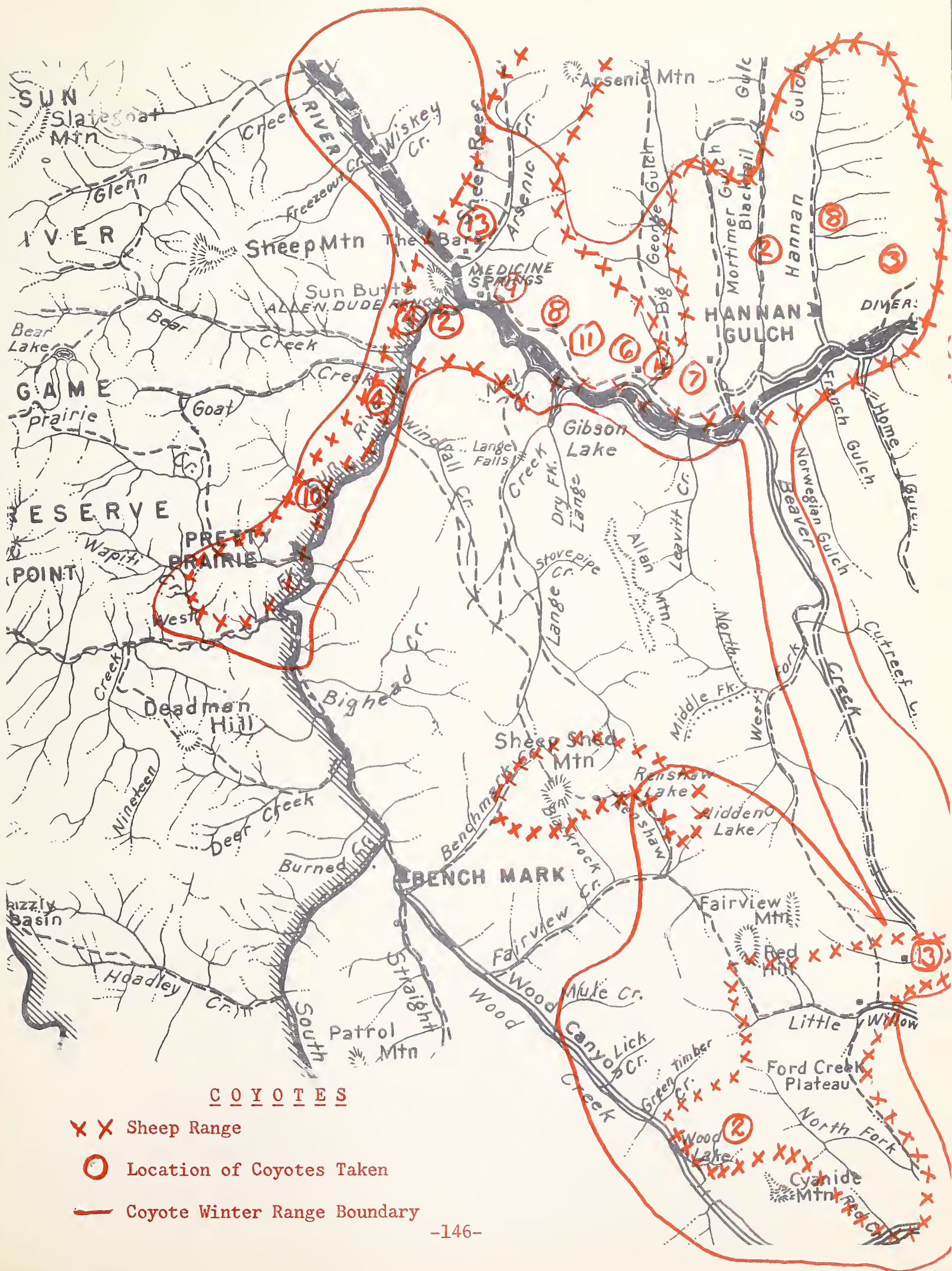
It was felt that a considerable additional number of coyotes were killed by the cyanide "getters", but due to fresh snow and other factors were overlooked even following a diligent search by the project personnel.

Twelve golden eagles were killed while tending the cyanide getters.

RECOMMENDATIONS:

It is felt that this program should be repeated next winter to insure the most beneficial results. Observations made next year while carrying out the control program would be of extreme importance in making a more complete evaluation of the work.

The annual mountain sheep census should be continued and should also provide basic data regarding the effect on population trends.



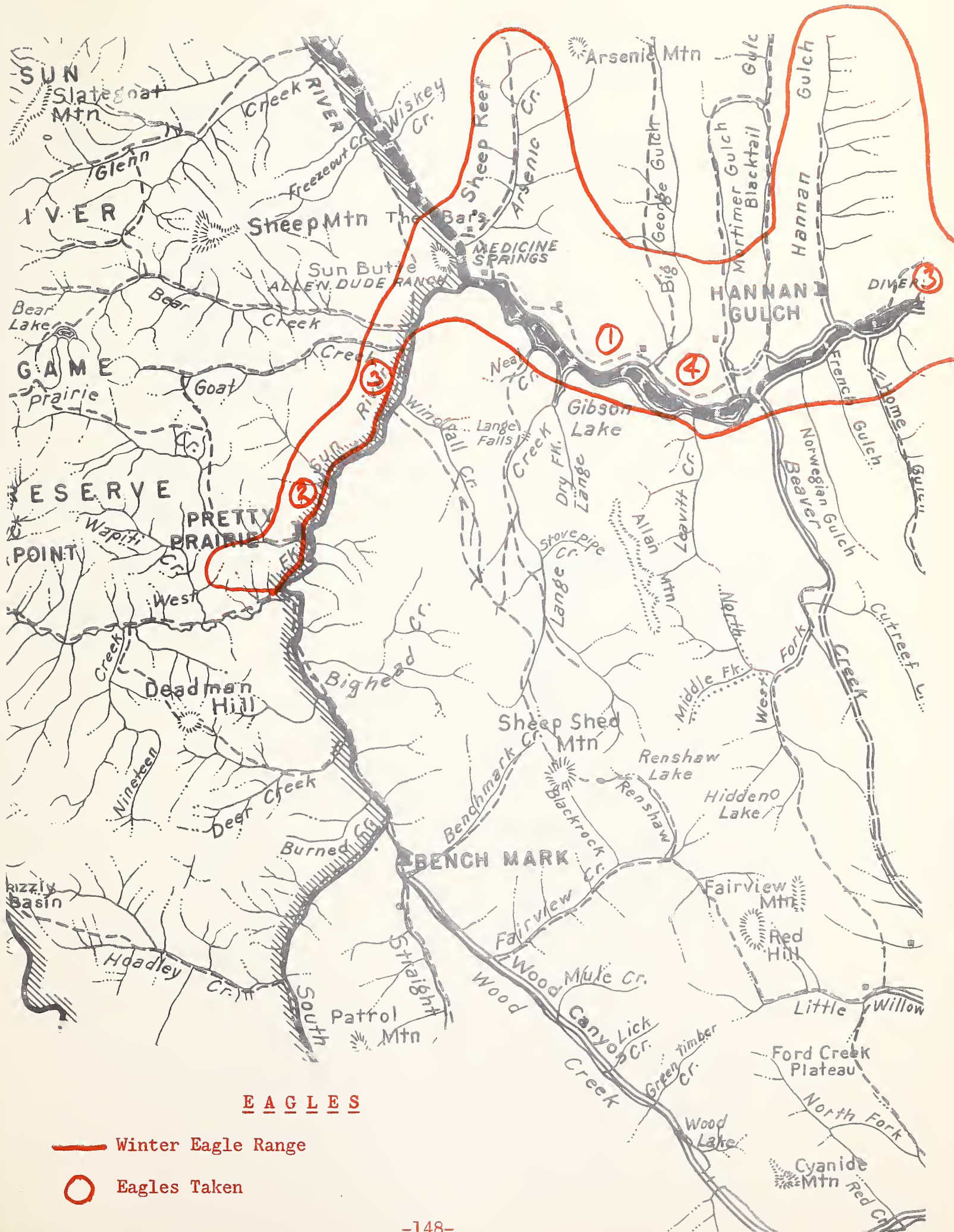


TABLE 2. Location of Coyotes Taken

Blacktail Gulch	2
Big George Gulch	20
Hannan Gulch	8
Mortimer Gulch	7
North Fork of Sun River	13
Scattering Springs	11
Sheep Trap	8
South Fork of Sun River	22
Reclamation Flats	9
Wagner Basin	3
Willow Creek	<u>15</u>
Total	118

Submitted by:

Approved by:

Name James McLucas

Montana State Fish & Game Department

Title Fieldman

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

STATE Montana
PROJECT NO. W-33-D-4
DATE April 15, 1953
VOL. IV No. 1

QUARTERLY PROGRESS REPORT FOR

DEVELOPMENT PROJECTS

As Required By

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Blackfoot-Clearwater Winter Big Game Range Development
2. Personnel: Stan Mongrain, Fieldman, Game Range Manager
Jack Ray, Fieldman
3. Report of Progress:

Fence

Approximately one mile of boundary fence was constructed.

Submitted by:

Name Stan Mongrain

Title Game Range Manager

Approved by:

Montana State Department of Fish and Game

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

STATE Montana
PROJECT NO. W-45-M-2
DATE April 15, 1953
VOL. IV NO. 1

QUARTERLY PROGRESS REPORT FOR

MAINTENANCE PROJECTS

As Required By

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title: Maintenance of Blackfoot-Clearwater Big Game Range
2. Personnel: Stan Mongrain, Fieldman, Game Range Manager
Jack Ray, Fieldman
3. Report of Progress:

A. Bridges

Considerable time was spent cutting, hauling and peeling timbers for stringers to be used in bridge repair. Tops were used for poles and posts to be used on the project.

B. Roads

Snow removal was necessary periodically on access roads and around headquarters buildings.

C. Fences

Weather was sufficiently moderate to permit maintenance of a considerable amount of fence. The horse pasture was particularly in need of this.

D. Game Baiting

Bait lines were established but received little use because of the extremely mild winter. Some elk drifting was conducted onto the range.

E. Miscellaneous

Some building repair was done including repair and insulation

of the bunkhouse ceiling.

Wood for fuel was cut and hauled to headquarters.

Elk trapping operations were conducted with moderate success.

Additional activities during the quarter were: trespass horse control, repair of vehicles and equipment, care of horses wintering on ranch, and hauling of hay and grain.

Submitted by:

Name Stan Mongrain

Title Game Range Manager

Approved by:

Montana State Department of Fish and Game

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

STATE	Montana
PROJECT NO.	W-47-M-2
DATE	April 15, 1953
VOL.	IV No. 1

QUARTERLY PROGRESS REPORT FOR
MAINTENANCE PROJECTS

As Required By

FEDERAL AID IN WILDLIFE RESTORATION ACT

1. Title of Project: Maintenance of Sun River Winter Elk Range
2. Personnel: Bruce Neal, Fieldman, Game Range Manager
Robert Neal, Fieldman, Assistant Game Range Manager
Dave Stonehouse, Laborer
Bert Goodman, Laborer
Dan Neal, Laborer
3. Report of Progress:

The entire quarter was spent working with elk in an effort to obtain the best possible distribution on the game range unit. A certain amount of manipulation was also necessary in bringing elk onto the game range from adjacent private land. In general the usage of the game range was very satisfactory during the period. The weather up until the end of the reporting period was relatively mild. Forage on the range was almost completely available.

The elk patrol operation was conducted on horseback and snowshoes where necessary.

Although a complete count of elk utilizing the game range was not possible due to almost continuously unfavorable flying conditions, it was estimated that between twelve and sixteen hundred elk wintered on the area. Very probably due to the lack of snow and resultant even utilization of the entire area, the usage of forage was comparatively moderate.

The elk trap previously constructed was erected on the range and kept baited throughout the entire period. Elk, however, showed little interest in the hay and cake used as bait. Several hundred drifted by the trap daily. Only nine were caught and tagged during the period.

The marking of elk on the Sun River winter range is considered to be a very important project as it would undoubtedly result in a great

deal of basic information regarding the migration of this herd throughout the Continental Unit on their drifts between the summer and winter range. It is hoped therefore, that a very substantial number of elk will be tagged in this area during the more severe winters. In this regard it is felt that the Sun River Game Range is exerting a very important effect upon the South Fork of the Flathead and possibly the Middle Fork elk herds in drawing substantial numbers out of these problem areas to winter in the Sun River. Basic data will naturally be necessary in order to completely evaluate this.

Submitted by:

Name Robert Neal

Title Assistant Game Range

Manager

Approved by:

Montana State Department of Fish and Game

By Robert F. Cooney, Director

Wildlife Restoration Division

Date April 15, 1953

